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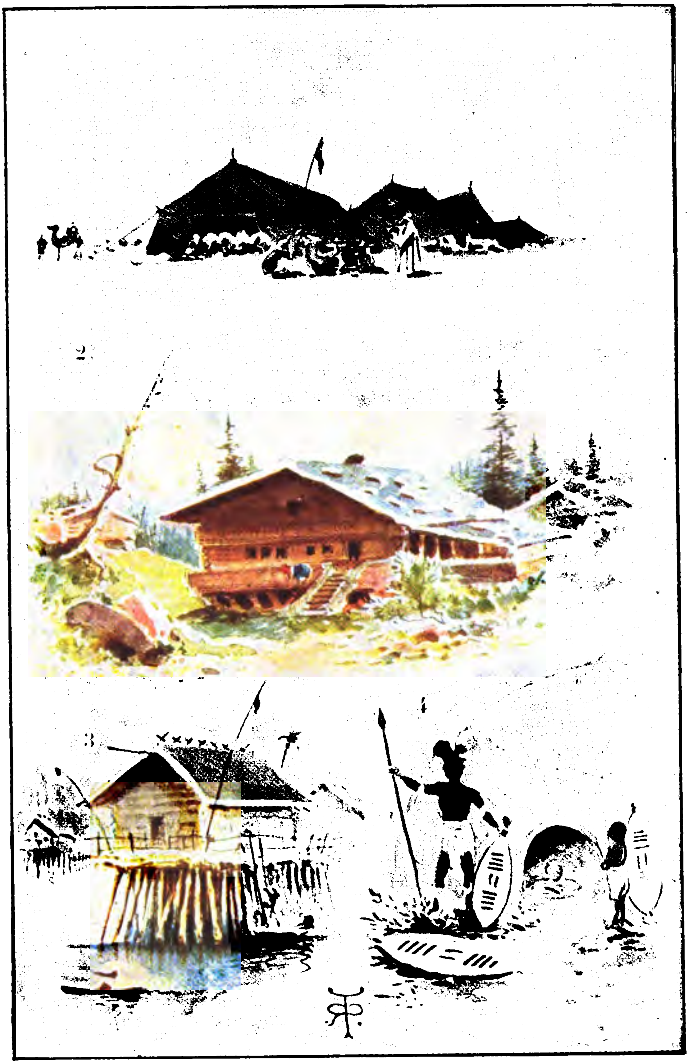

TYPES OF DWELLINGS.

1. An Arab Tent.
2. A Swiss Chalet.
3. A House on Piles.
4. A Kaffir Hut.

LONGMANS' PICTORIAL
GEOGRAPHICAL READERS

BOOK I

LONGMANS, GREEN, AND CO.
91 AND 93 FIFTH AVENUE
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[illegible]

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LONGMANS' PICTORIAL GEOGRAPHICAL READERS

BOOK I.

LESSON 1.

A BIG BALL.

faced
climbed
read′-ing
In′-di-a
rub′-ber
watch′-ing
sail′-ing
per-haps′
or′-ange
bot′-tom
bulg′-es
cen′-ter
placed
lev′-el
mov′-ing
far′-ther

1. A man and a boy were resting on the top of a high cliff which faced the sea. It was a very warm day, and they had climbed the cliff to catch the cool breeze that blew over it.

2. The father was reading a book, but the boy sat with his eyes fixed on the sea, which was almost as smooth as glass. A large India-rubber ball lay on the grass beside him.

3. The boy was watching the few ships that were in sight. There was not much of a breeze, and to him the ships seemed to be standing still.

4. The day was clear, and soon the sharp eyes of the boy saw something which caused him to call out, "Look, father, there is a ship sinking!"

5. His father looked up, and in a very calm way said, "Where, Tom?" He knew

there was little risk of any ship sinking on such a fine day.

6. "Over there, right against the sky, where the sky and the sea meet," said Tom. "Look! you can now see only the masts and some of the sails. A short time ago I could see the whole of the ship." Tom was only seven years of age, and this was his first visit to the seaside.

7. "That ship is not sinking, Tom," said his father. "It seems to be sinking, but, as a matter of fact, it is still sailing on the top of the sea."

8. Just then his father's eye fell on the ball. "Give me that ball, Tom," said he, "and we will see if it will help us to find out why the ship sinks out of sight, and yet does not sink into the sea."

9. His father took the ball in his hand, and said to Tom, "The earth on which we live is something like this ball in shape, but perhaps it is more like an orange, a little flat at the top and bottom. It also bulges out in the center more than a ball."

10. He then stuck a few pins in a line, into the ball, the first one being on the top of the ball. He then placed the ball on a level with Tom's eye, and asked him to look at the pins without moving his head.

11. Tom could see the whole of the first pin, but of the others he saw less and less. The farther they were away from his eye, the less he could see of them. Some he could not see at all.

12. "Now," said his father, "let the pins be your ships, and the ball the earth, and then you will know why the ships seem to sink down into the sea."

LESSON 2.

A LARGE CINDER.

quar′-ter
baked
dough′
ques′-tion
showed
cool′-ing
al-though′
e-nough′
liv′-ing
ash′-y
cin′-der
lev′-el
thought′-ful
hill′-y
wrin′-kles
moun′-tains

1. "What is the earth made of?" asked Tom. "Is it all land and sea?"

2. "Well, my boy, I cannot say what the inside is made of, but the outside, or crust, is all land or water. About one-quarter of the whole crust is land, and about three-quarters are water."

3. "What do you mean by crust?" asked Tom.

4. "We call the outside of the earth its crust, just as we call the outside of a loaf the crust," said his father.

5. "But a loaf does not have any crust until it has been baked. It is soft dough

before it is put into the oven. You do not mean to say that the earth has been baked, do you, father?"

6. Tom was not quite clear about the crust, but this question of his showed that he was a thoughtful boy, and one who kept his eyes open.

THE OLD WORLD.

7. "Not quite, my boy," said his father. "Once, our earth was a ball of fire like the sun. But it is cooling, and although it is still very hot inside, it is cool enough

on the outside for man, beasts, birds, fishes, and plants to live on it."

8. Tom did not seem to like the idea of living on something that had been a ball of fire, and which was still very hot inside.

THE NEW WORLD.

9. "You have seen," his father went on, "a large piece of red-hot coal fall out of the fire. It begins to cool at once. The bright red becomes dull, the dull red fades away into an ashy gray, and then

it turns black. The cinder is cooling on the outside, although it may still be red inside. The earth is much like a cooling cinder."

10. "I should like you to tell me one thing more, father, if you do not mind," said Tom. "The sea is level, but the land in some places is hilly, and in others flat. How is that?"

AN OLD APPLE, SHOWING WRINKLES.

11. "Do you remember how an old potato or an old apple looks?" asked his father.

"Yes," said Tom. "I saw some to-day. The skins were full of wrinkles."

12. "Did the wrinkled apple remind you of a boy in a suit too large for him?" asked his father. "It is something like that with the old apple or potato. The skin is too large for the inside. It does not *fit*. It wrinkles."

"But," said Tom, "in the autumn the skin is not too large."

13. "Very true," explained his father, "but during the winter the fruit or vegetable loses something. It loses some of its moisture; in other words, it grows thin, as people do, so that its skin does not fit.

14. "With the earth it is much the same; it has grown thin because it has lost heat. Its skin or crust is larger than the inside; like the boy's suit or the apple's skin, the crust wrinkles.

15. "These wrinkles of the earth's crust give us our hills and valleys, our mountains and plains. You can see that the earth is more beautiful *because* of its wrinkles."

LESSON 3.

A BALL OF FIRE.

ly′-ing
cat′-tle
sought
hedg′-es
grum′-bled
weath′-er
teach′-er
scorch′-ing
try′-ing
add′-ed
twin′-kle
ex-cept′
an-oth′-er
im-ag′-ine
burn′-ing
whole

1. One very hot day in July a few schoolboys, among whom was our friend Tom, were lying on the grass in the shade of a large tree.

2. The sun shone with great force, and even the cattle had sought the shade of the trees and hedges, to get out of the heat.

3. It was too hot to play, and the boys grumbled at the weather. Only one of them, Jack Lazy, thought the weather very nice, because it was too hot to do anything.

4. "Well, boys, do you find it too hot to play?" said a well-known voice. The boys looked up, and there stood their teacher.

5. "Oh, Mr. Stevens," said Tom, "it is more than hot. The sun is like a big fire. It is scorching."

6. "Well, the sun is a big fire, Tom, a big ball of fire," said his teacher.

7. "I wish some one would put the fire out, then," said one of the older boys, "and then we could have a game at something."

8. "No, you could not," said Mr. Stevens, "for if the fire of the sun were put out, we should all die."

"You do not mean that, do yo
asked Tom.

9. "Yes, I mean every word of it.
am not trying to make a joke. All
light, our heat, and our very lives co
from the sun. Even if we could l
without the sun, we could not do a
work or have any play without its he
And I do not think any of us would lil
that," he added, with a sly twinkle in h
eye, "except Jack Lazy."

10. "The sun must be a very big bal
of fire," said another of the boys, named
Fred Keen, "to make us so hot when it
is so far away."

11. "If you saw the school on fire," said the teacher, "you would think it was a very large fire, I have no doubt."

"Yes, sir," said the boys.

12. "And if the town were on fire, that would be a bigger one still. But if you could imagine the whole world to be burning, even then you would have a very small fire, if it were placed beside the sun," added Mr. [illegible]

LESSON 4.

A DAY'S JOURNEY.

coun′-tries	**cooked**	**sim′-ply**	**jour′-ney**
weath′-er	**beef′-steak**	**plac′-ing**	**re′-al-ly**
clev′-er	**roast′-ed**	**trav′-el**	**twen′-ty**

1. "Do you not think it would be much nicer to live in some place where the sun was not so hot?" asked one of the boys.

2. "I should not care to live in any country where there was less hot weather than we have here," said Mr. Stevens.

3. "Oh, but it is much too hot here," said Fred Keen, "we cannot even have a game."

4. "It is very hot to-day, I own," said Mr. Stevens, "but there are many worse countries in the world than ours, so far as weather goes. Some are too hot, and some are too cold, and some are neither too hot nor too cold. Such places are the best for health and work, and our country is one of them."

5. "But no places have any hotter days than this, do they?" asked Tom.

6. "Very much hotter," said Mr. Stevens. "It is so hot in one part of Africa, that a clever man cooked a beefsteak and roasted some eggs by simply putting them in a box with a glass lid, and then placing the box in the sun!"

7. "It is always so much hotter in the afternoon," said Fred Keen. "It is cooler in the morning, and it is cooler at night."

8. "Just so," said Mr. Stevens. "The sun rises every morning in the east, seems to travel across the sky, and then sets in the west. Sometimes it climbs high in the sky, and makes a big curve in its day's journey. That is in the summer.

9. "At other times it does not climb so high. It then takes a shorter path through the sky. That is in the winter."

10. "Then the sun goes a longer journey each day in the summer than in the winter?" asked Fred Keen.

11. "Yes," said Mr. Stevens.

12. "Why did you say 'seems' to travel across the sky, sir?" asked Tom.

13. "The sun does not really travel

across the sky," said Mr. Stevens; "it is the earth that moves. It turns round once every twenty-four hours."

14. "But how does that make the sun seem to move?" asked Tom.

15. "You have been for a ride in a train, and seen the trees and fields rush by you, have you not?" asked Mr. Stevens.

16. "Yes, but of course we know the trees and fields do not move, although they seem to do so. It is the train that moves," said Tom.

17. "In the same way, it is the earth that moves, and not the sun," said Mr. Stevens; "but we always speak of the sun as though it did move across the sky."

LESSON 5.

THE NORTH WIND.

east
spin′-ster
tongue
frisk′-y
lan′-guid
proud
mien
haunts
fe′-vers

1. The East Wind is a spinster,
   With a tongue both loud and shrill;
The West Wind is a frisky girl,
   Who laughs and sings at will;

The South Wind is a languid dame,
  Scornful and proud of mien;
But the North Wind is a doctor,
  The busiest ever seen.

2. All day, and sometimes all night, too,
  She drives the land about,
Cleansing the haunts of fell disease,
  And rooting fevers out;
Quickening low pulses, bringing life
  To weary nerve and brain,
And making dull and heavy hearts
  Feel strong and fresh again.

3. She is so big and strong, and yet
  She cares for little joys,—
Spreads frozen tracts for little sleds,
  And ice for skating boys;
Furnishes myriad balls of snow
  For all the children's plays;
And sends fresh, sudden puffs of air
  To cool the summer days.

4. We have been friends these many years,
  This dear North Wind and I;

And always when I hear her wings
  Sweeping along the sky,
I smile and look up where she is,
  And she smiles down at me;
For her heart is true as steel to those
  Who love her loyally.

SUSAN COOLIDGE.
(Abridged.)

LESSON 6.

THE QUEEN OF THE NIGHT.

love′-ly
gar′-den
in-deed′
rea′-son
near′-ly
looked
sis′-ter
peo′-ple
patch′-es
fan′-cy
fa′-ble
liv′-ing
a-gree′
less′-er
get′-ting
in′-doors

1. "What a lovely moon there is to-night," said Tom's father; "let us go into the garden and look at it."

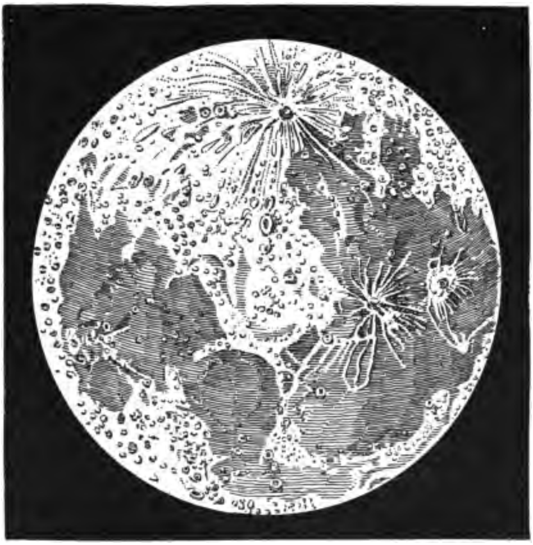
2. The moon was indeed lovely that night. Its pale cold light made it look like a large lamp in the sky.

3. "I can look at the moon," said Tom, "but I cannot look at the sun when it is bright, because it makes my eyes water."

4. "The light from the sun is so much stronger than the light from the moon,"

said his father. "That is the reason why you cannot look at the sun."

5. "How large it seems to-night!" said Mary. "It must be nearly as large as the sun."



THE FACE OF THE MOON.

6. Tom looked round at his sister and said, "The moon is not nearly so large as the sun, Mary. It looks large, because it is so much nearer to us than the sun. The moon is not even so large as the

earth, and Mr. Stevens told us the other day that the sun was many times bigger than the earth."

7. "Is there a man in the moon, father?" asked Mary.

8. "No, my child," said her father. "You can see some bright and dark patches on the moon, and some people think these patches look like a face. This fancy may have given rise to the fable of the 'Man in the Moon.' Of course, it is a fancy, and nothing else. There is no man in the moon, and if there were, we could not see him."

9. "But are there no people in the moon?" asked Mary.

10. "No, dear," said her father. "There is no air, no water, and no life in the moon, so far as we know. None of us could live in the moon, nor could any of the things that live on this earth."

11. "But it is very nice to have a moon, is it not, father?" asked Mary.

12. "Yes, I quite agree with you," said her father. "The moon gives us light by

night, when the sun is away. The moon is Queen of the Night, just as the sun is King of the Day.

13. "God gave us the sun, the greater light, to rule the day; and the moon, the lesser light, to rule the night. Our nights are very dark when there is no moon. But it is getting late, and I think we had better go indoors."

LESSON 7.

THE LITTLE BOY AND THE MOON.

pret′-ty
smil′-ing
bright′-ly
yel′-low
al′-most
soft′-ly
lad′-der
slow′-ly
sail′-ing

1. Pretty moon, your face I see,
Just above the garden tree.
Are you smiling now for me?—
Moon so brightly smiling!

2. Yellow moon, so bright, so near,
In the sky so soft and clear,
I can almost reach you here—
Moon so softly shining!

3. Bring the ladder strong and new,
Now I know what I will do.
I will climb and sail with you—
Moon so slowly sailing!

EMILY HUNTINGTON MILLER.

LESSON 8.

A STARRY NIGHT.

gar′-den	**un-til′**	**twin′-kle**	**far′-ther**
dark′-er	**seemed**	**dur′-ing**	**e-nough′**
be-gan′	**star′-ry**	**oft′-en**	**num′-ber**
them-selves′	**turned**	**sin′-gle**	**moon′-less**

1. Each night, Tom and Mary went into the garden to look at the moon, for the chat they had had with their father had made them think much about it.

2. Each night, they saw the moon grow less and less, and the nights became much darker. But as the moon grew less, the stars began to show themselves, until the whole sky seemed full of them.

3. Mary ran in to fetch her father. "Oh, do come into the garden, papa," said she. "The sky is full of stars. It is such a fine starry night."

4. Her father put on his hat, and soon all three of them had their eyes turned to the sky, to look at the stars.

5. "How pretty they are!" said Mary; "and what a pity it is that they twinkle and shine only at night. Do they sink to rest in the daytime, as the sun does at night?"

6. "No," said her father. "The stars are always in the sky, both day and night, only we cannot see them during the day."

7. "But look how bright they are," said Mary. "I should think that if such bright things are always in the sky, they could be seen both day and night?"

8. "It is not often that you see so many stars in the sky as there are to-night, even at night-time," said her father; "and in the daytime they are never seen at all. But there, I dare say Tom could tell you why it is so."

9. "The light of the sun is so much greater than the light of the stars," said Tom, "that it seems to blot them out. We cannot see the pale small lights of the

stars, when the great strong light of the sun is in the sky."

10. "But there is no sun at night," said Mary, "and sometimes there is not a single star in the sky; or only very few of them," she added.

11. "Some of the stars are suns like our sun," said her father; "some are worlds like our world; and some are like our moon. But they are all very far away, farther than the moon, and most of them even farther away than the sun.

12. "Hence the light of the moon is enough to blot out a large number of them from our eyes. It is only on moonless nights like these that you get a real starry night."

LESSON 9.

THE LITTLE BOY AND THE STARS.

twin′-kling **mer′-ri-ly** **ques′-tion**
twin′-kle **won′-der** **lis′-ten**

1. You little twinkling stars, that shine
Above my head so high;
If I had but a pair of wings,
I'd join you in the sky.

2. I do not know how old you are,
Or whether you can speak;
But you may twinkle all night long,
And play at hide-and-seek.

3. If I were with you, little stars,
How merrily we'd roll
Across the skies, and through the clouds,
And round about the pole!

4. The moon, that once was round and full,
Is now a silver boat:
We'd launch it off that bright-edged cloud,
And then—how we should float!

5. Oh, tell me, little stars! for much
I wonder why you go,
The whole night long, from east to west,
And why you go so slow.

6. "We have a Father, little child,
Who guides us on our way;
We never question; when he speaks,
We listen and obey."

EVERITT.

LESSON 10.

SHADOWS.

broth′-er
fun′-ny
shad′-ow
but′-ter-fly
flapped
rab′-bit
want′-ed
an-oth′-er
be-tween′
thrown
light′-ed
can′-dle
care′-ful
be-cause′
learned
through

1. One night, Tom's brother made some funny shadows on the wall. He put his hands together in such a way that he made a shadow like a butterfly. This shadow flapped its wings just as a real butterfly does.

2. Then he made another shape with his hands, and Tom saw on the wall a shadow like a rabbit. Tom laughed when he saw the shadow open and shut its mouth just as a real rabbit does when it eats.

3. Tom wanted to make a butterfly as his big brother had done. He put his

hands the proper way, but he could not get a good shadow at all.

4. He tried to get a shadow first on one wall, then on another, but it was of no use. His brother said, "You will never get a shadow if you do like that. Look where I put my hands when I want to get a good shadow."

5. Tom looked, and saw that his brother always put his hands between the light and the wall. Tom did the same, and made first a fine butterfly, and then a rabbit, just as his brother had done.

6. One night, Tom's brother got an old slate frame, and filled it with some thin white paper. He next found some cardboard, and cut out some funny men. Then he got a lighted candle, put it on one side of the sheet, and told Tom to stand on the other side.

7. Tom saw shadows of the funny men

thrown upon the sheet of white paper by the light of the candle.

8. Next Tom tried to make the shadows. He was careful to put the pieces of cardboard between the candle and the white paper, and he got some fine shadows of the funny men.

9. He then put a piece of glass between the light and the paper, but the glass did not make a good shadow, because it let the light go through it.

10. So Tom learned that to make a shadow you must have three things: a light, something to make a shadow, and something upon which the shadow may fall. The thing which is to make the shadow must not let the light go through it, and it must be placed between the light and the thing upon which the shadow is to fall.

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LESSON 11.

MY SHADOW.

shad'-ow	rub'-ber	**but'-ter-c**
fun'-ni-est	no'-tion	**ar'-rant**
In'-di-a	cow'-ard	**sleep'-y**

1. I have a little shadow that goes in a
out with me.
And what can be the use of him i
more than I can see.

He is very, very like me from the hee
up to the head;
And I see him jump before me, when I
jump into my bed.

2. The funniest thing about him is the
way he likes to grow—
Not at all like proper children, which
is always very slow;

For he sometimes shoots up taller, like
an India-rubber ball,
And he sometimes gets so little, that
there's none of him at all.

3. He hasn't got a notion of how children
ought to play,
And can only make a fool of me in
every sort of way.

He stays so close beside me, he's a coward, you can see;
I would not stick to Nursie as that shadow sticks to me!

4. One morning, very early, before the sun was up,
I rose and found the shining dew on every buttercup;

But my lazy little shadow, like an arrant sleepy-head,
Had stayed at home behind me and was fast asleep in bed.

ROBERT LOUIS STEVENSON.

LESSON 12.

A FUNNY CLOCK.

PART 1.

learn′-ing
could
ex-cept′
af-ter-noon′
to-mor′-row
thought
brought
car′-ry-ing
teach′-er
shin′-ing
marched
moved

1. The boys in Tom's class had been learning to tell the time. They were able to find out when it was twelve o'clock, nine o'clock, two o'clock, and half-past four.

2. All the boys except two could tell these times quite well. These two boys were named Willy Late and Jack Lazy.

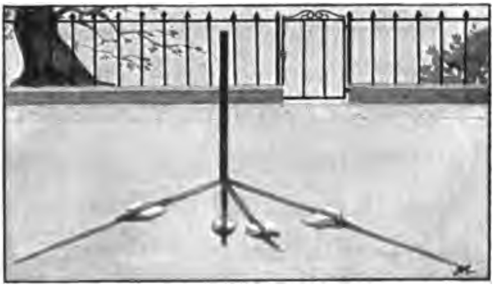
3. Willy Late could not tell nine o'clock, and the only time that Jack Lazy could tell was twelve o'clock.

4. One afternoon, the teacher said, "I want Willy Late to bring me a broomstick to-morrow morning, and Jack Lazy to bring me four large stones. Then we will begin to make a clock."

5. Now the boys could not see how the teacher was going to make a clock out of a broomstick and four large stones.

They knew that a clock had a lot of wheels inside it, and they thought it was a very hard thing to make.

6. For a wonder, Willy Late came quite early the next morning, and brought the broomstick. Jack Lazy brought four large stones, and looked as if he had been doing some hard work in carrying them.



7. The teacher stuck the broomstick in the middle of the playground, and the boys stood round it. Just then the church clock struck nine. The sun was shining. The boys saw that the stick made a shadow, and the teacher told Jack Lazy to put one of the stones in the shadow.

8. The boys next marched into school, and all the morning they were waiting for the teacher to begin to make the clock.

9. Just before twelve they went into the playground again, and they saw that the shadow was not over the stone at all. The stick had not moved, and the stone had not moved, so the boys thought that the shadow must have moved.

10. Just then the clock struck twelve, and the teacher told Jack to put the second stone in the shadow.

11. At two o'clock the shadow had moved again, and Jack put the third stone to show where the shadow was then. When the boys came out of school at half-past four, the shadow had moved again, and Jack put the fourth stone to mark the half-past-four shadow.

12. There were now four stones. The first marked the nine-o'clock shadow, the second, the twelve-o'clock shadow, the third, the two-o'clock shadow, and the fourth, the half-past-four-o'clock shadow.

LESSON 13.

A FUNNY CLOCK.

PART 2.

looked
think′-ing
un-der-stand′
win′-ter
af-ter-noon′
meas′-ure
mid′-dle
low′-er
high′-er
long′-er
seemed
morn′-ing

1. The boys looked at the shadows the next day at the same times, and the shadows were in the same places as before.

2. They saw that the nine-o'clock shadow and the half-past-four shadow were long, and that the twelve-o'clock shadow was very short. The two-o'clock shadow was a little longer than the twelve-o'clock shadow, but not so long as the other shadows.

3. They saw, too, that they could tell the time by looking at the place of the shadow of the stick, in much the same way as they could tell the time by looking at the place of the hands of a clock.

4. The teacher had made a kind of clock with a broomstick and four stones,

but it was not the sort of clock the boys had been thinking about.

5. There were two things they could not understand. They could not understand why the shadow moved, and why it was sometimes short and sometimes long.

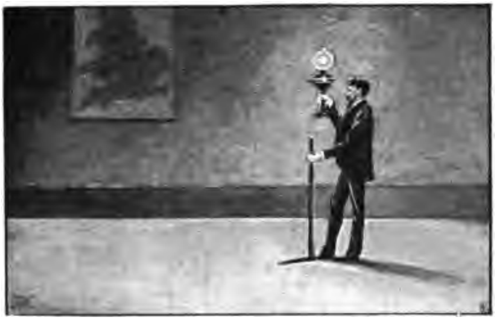
6. One winter afternoon, when it was quite dark, the teacher brought a bright lamp into the room. He told Willy to stand in the middle of the room. Then he held the light nearly, but not quite, over Willy's head. He told Jack Lazy to measure Willy's shadow on the floor.

7. The teacher next held the light lower down, and the boys saw that Willy's shadow grew much longer.

8. The boys then understood that a low light makes long shadows, and that a high light makes short shadows.

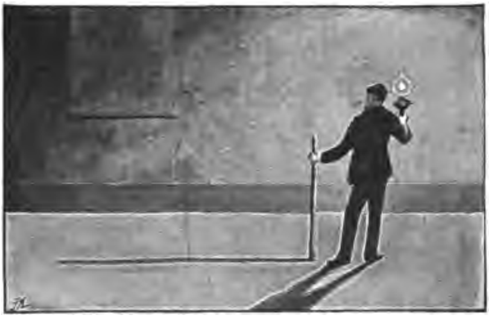
9. They knew that at nine o'clock the sun was not very high in the sky, that it rose higher and higher until twelve o'clock, and that after that, it sank lower and lower until sunset.

10. The teacher stood the broomstick in the middle of the floor, and moved the lamp just as the sun seemed to move across the sky.



A HIGH LIGHT MAKES A SHORT SHADOW.

11. First he held the lamp low, to make it like the morning sun, and then the stick threw a long shadow. He next



A LOW LIGHT MAKES A LONG SHADOW.

moved the lamp, and as it moved, the shadow moved too. The higher the lamp was, the shorter the shadow became; and when the lamp was overhead, as the sun stands at twelve o'clock, the shadow was very short.

12. He next made the light sink on the other side, as the sun does in the afternoon, and the shadow of the stick became longer and longer.

LESSON 14.

SOME MORE FUNNY CLOCKS.

Eas′-ter	**thou′-sands**	**wait′-ing**	**meas′-ure**
Vir-gin′-i-a	**di′-al**	**mot′-to**	**coun′-tries**
Wash′-ing-ton	**showed**	**can′-dles**	**screen**

1. During the Easter holidays, Tom went with his father on an excursion to Mount Vernon, in Virginia. He was delighted to see for himself this beautiful home where Washington had lived and died, and he thought the place much more beautiful than any of the pictures he had seen of it.

2. He was glad to know that thousands

of the school children of the United States, by giving five cents each, had helped to buy this historic home.

3. One day at school Mr. Stevens asked Tom what he had liked best at Mount Vernon.

4. "The sundial," replied Tom promptly. "What is a sundial?" asked several of the boys at once.

5. "Don't you remember," said Tom, "the funny clock we made with the broomstick and the stones? That was a sundial, was it not, Mr. Stevens?"

6. "Yes," replied Mr. Stevens, "our funny clock was a very simple sundial. Was the one at Washington's home like it?"

7. "Not just like it," replied Tom. "The one I saw was more like the face of a clock, for it had all of the hours, from one to twelve, marked on it."

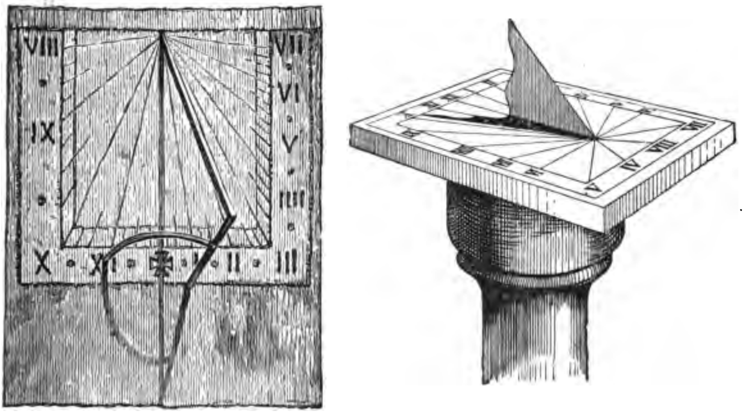
8. "Then with a *real* sundial Washington did not need a clock, I suppose." said Mr. Stevens.

9. "Oh, yes, Mr. Stevens," exclaimed

Tom. "When the sun is behind a cloud, the dial does not tell the hour, for there is no shadow on it."

10. "Are you quite sure of that, Tom?" asked Mr. Stevens.

11. "Yes, sir," replied Tom. "We noticed it at Mount Vernon. And while we were waiting for the cloud to pass, my father read on the dial the Latin words which said, 'I record none but sunny hours.'"



THE SUN RETURNS, BUT NOT SO TIME.

I WAIT FOR NO ONE.

SUNDIALS.

12. Mr. Stevens then showed the boys some pictures of sundials which he had

seen in his travels. Each dial had a motto on it. Sometimes the motto was written in Latin, sometimes in French, and sometimes in Italian.

13. "I think you are right, Tom, about the cloud. Here is a picture of a dial on a church in Lincolnshire, England. The motto is, 'Without sun—without use'; another dial has the motto, 'When the sun sinks, of the dial none thinks'; and still another one says, 'The hour I tell not, when the sun will not.'"

14. "I don't see," said one of the boys, "how people used to tell time on dull days and at night. Were there other funny clocks, Mr. Stevens?"

15. "Yes, indeed, many of them. I hope, when you go abroad, you will see in Vienna a most curious and most interesting collection of ancient clocks and watches and other timekeepers.

16. "I am sure you would think them very funny indeed, and would wonder how they could tell the time. But they did so in all kinds of weather and at night, and so, perhaps, were more useful than the sundial. Some of these very old clocks measured time by water, others by sand, and still others by candles."

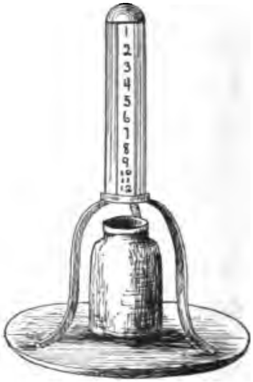
17. The boys thought water, sand, and candles must make even funnier clocks than broomsticks and stones. "I think," said Mr. Stevens, "that some of you must have seen a sand clock—one that runs but a few minutes at a time. Here is one."

18. "Oh, yes," said one of the boys. "We have one at home like that. We boil eggs by it."

19. "The sand clock which people used to measure time by was larger than this

HOURGLASS.

one; it ran for an hour, and was called an hourglass. Water clocks were used before sand clocks, and are still used in some countries. One of the simplest clocks of this kind was made of a tall glass jar with a *very small* hole in the bottom. The jar was divided, from top to bottom, into twelve divisions. This, you see, is like the divisions on the sundial, and on our clocks and watches.



A WATER CLOCK.

20. "To wind up this funny clock, the hole in the bottom was closed and the jar filled with water. To set the clock in motion, the stopper in the bottom was taken out. Little by little, *drop by drop*, the water in the jar fell from number to

number—from one o'clock to two, from two o'clock to three, and so on, for twelve hours, when the jar was empty."

21. "I wish we had one of those funny water clocks here," said one of the boys.

22. "Perhaps we will make one some day," said Mr. Stevens, "and perhaps, too, you would like to make a candle clock like the one Alfred the Great made for himself. This good king made his clock of candles just twelve inches long, which were marked off into inches. A candle twelve inches long burned away in four hours. To-morrow I shall ask you how many candles the king's clock required in twenty-four hours, and how long a time an inch lasted.

23. "You can see that this candle clock was not a very good one. Draughts of wind made it burn faster at some times than at others. If the wind sometimes blew out the flame, the clock, of course, stopped. This was inconvenient for the king, so he protected the flame by placing around the candle a screen of very thin

horn. This was a great improvement, for now the candle burned evenly, the wind did not blow it out, and the king had invented the *lantern.*"

LESSON 15.

NORTH AND SOUTH.

ar′-row	**mak′-ing**	**look′-ing**	**print′-ed**
let′-ter	**point′-ing**	**mid′-day**	**tired**

1. On the top of the school there was a large arrow, which was hardly ever still. The boys knew that it was moved by the wind.

2. Under the arrow there were four arms, and at the end of each arm there was a letter. The teacher told them that the whole thing was called a vane, and asked for the names of the four letters at the ends of the arms. Some boys held up their hands, but some did not know.

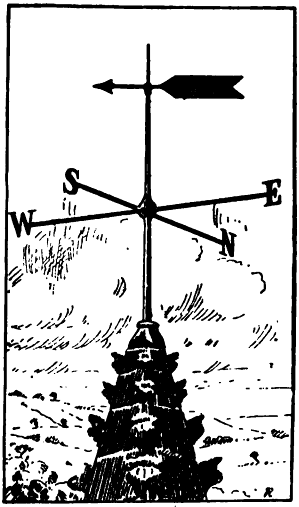
3. Just before twelve o'clock, the teacher took them all into the playground, and they saw that the letters were N, S, E, and W.

4. They were then told to stand round

the broomstick, and to look at the shadow which was just over the twelve o'clock stone.

5. The teacher drew a long chalk line along the shadow, and told Willy to stand on this line and look at the broomstick.

6. Willy very soon said, "Please, sir, the sun is right in my eyes, and is making them water."



7. "I knew it would," said the teacher, "and I will not keep you there very long. I want the boys to see that the vane having the letter S on the end of it is pointing the same way that you are looking.

8. "The letter S stands for south, and when you are looking at the sun at midday, you are looking towards the south."

9. The teacher then printed a large S at the end of the line that was nearer the sun.

10. "Now turn your back to the sun," said the teacher, "for I am sure your eyes must be tired."

11. Willy was glad to do this, and all the boys saw that he was looking in the same direction the letter N of the vane was pointing.

12. "The letter N stands for north," said the teacher. "I will put a large N at the other end of the line." There was now a long chalk line on the ground, with N for north at one end of it, and S for south at the other end.

13. All the boys now stood in a line and turned their backs to the sun. They knew that they were looking towards the north.

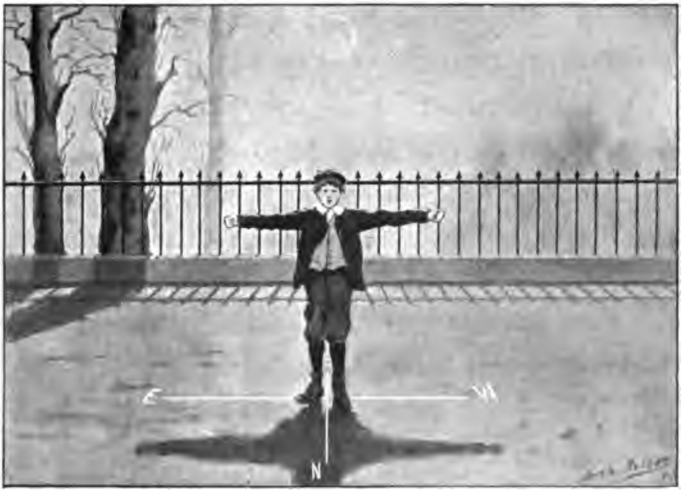
14. The school was straight in front of them, and the church was right behind them. So the school was north, and the church was south of the place where they were standing.

LESSON 16.

EAST AND WEST.

af′-ter-wards
an′-y-thing
point′-ing
to′-wards
di-rec′-tion
stretched
matched
morn′-ing
eve′-ning
leaned
laughed
tired

1. Soon afterwards, the boys had another lesson in the playground. They first went over what they had learned about north and south.



2. The teacher told Willy to stand on the chalk line marked north and south, and to look towards the north.

3. "Now, Willy," said the teacher, "stretch out your arms. I will draw another line on the ground under your arms. You see that this line runs right across the first line, and is pointing to the same places that your hands are.

4. "Boys," said the teacher, "I want you to see if anything on the vane is pointing the same way that Willy's right hand is pointing."

5. The arm of the vane with the letter E on it, was pointing in the same direction. The teacher put E at the right-hand end of the line, and told the class that the letter E stood for east. The class next learned that the letter W of the vane stood for west.

6. The boys now saw that the N, S, E, and W, which had been printed on the playground, just matched the same four letters on the vane.

7. "Now," said the teacher, "I want you all to say this after me: 'When I turn my back to the sun at midday, I am facing the north, and turning my back

to the south. My right hand is pointing towards the east, and my left hand is pointing towards the west.'"

8. The boys then found out that the sun was in the east in the morning, in the south at midday, and in the west in the evening.

9. The teacher called Jack Lazy out, and told him to stand near the broomstick. Jack, of course, leaned up against it. The teacher took the stick away, and all the boys saw that Jack's shadow was over the line marked N and S.

10. The teacher said that Jack had done something, for he had made a shadow. All the boys laughed. The teacher said that Jack Lazy had an easy task now, for he had nothing to do but to stand still all the rest of the day and make shadows.

11. He asked Jack if he would like that. Jack said that he would rather go home to dinner, and come to school to work in the afternoon. The boys laughed again, when they heard Jack

Lazy say that he wanted to do some work.

12. All were then sent home, and Jack was glad to go with them. In the afternoon Jack *did* work hard. He was tired when school was over, but not half so tired as he would have been if he had done nothing but make shadows in the playground.

LESSON 17.

THE WEATHERCOCK'S COMPLAINT.

creaks	**qui′-et**	**signs**	**growls**
mist′-y	**rain**	**se′-cret**	**fowls**
earn′-ing	**a-gain′**	**lies**	**twist′-ing**
weath′-ers	**sun′-shine**	**yes′-ter-day**	**fore-told′**

1. No wonder he creaks as the wind
   goes by,
No wonder he turns with a misty sigh;
How would you like a living earning
By turning—turning—turning—turning?
Or to stand all your life with a pole
   for your base,
And the winds of all weathers to blow
   in your face?

2. "Creak, creak, creak!" we hear him say,
"To-morrow will be like yesterday,—
Now to the east, now to the west—
One never has any quiet or rest;
An hour of sunshine, another of rain,
It's nothing but turning and turning again.

3. "Creak, creak, creak," the tin bird cries,
"In quite a few signs the secret lies;
When the wind's from the west, there's nothing to fear;
When the wind's from the east, a storm is near;
Can't everyone tell when the day is clear
Without keeping me turning and twisting here?

4. "Creak, creak, creak," the weather-cock growls,
"I think I'm the most ill-used of fowls;

I never foretold bad weather yet
But you went in while I got wet;
Say what you may, I don't think it's right
To keep me twisting from morning to night."

SELECTED.

LESSON 18.

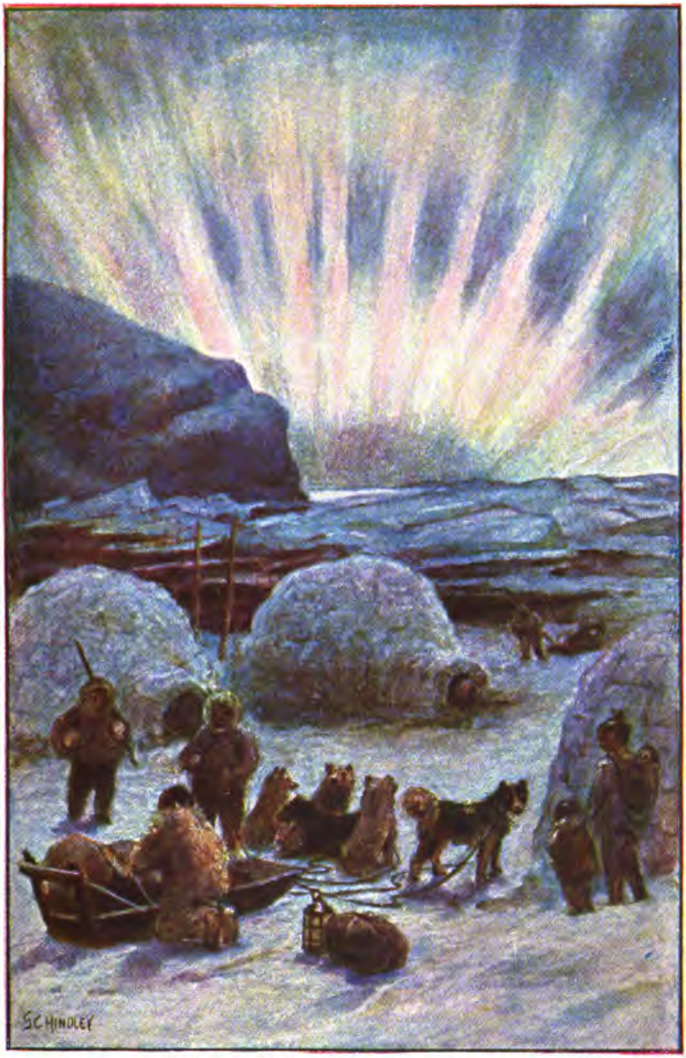
TWO FAIRIES.

fair′-ies	**think′-ing**	**cov′-ered**	**o′-cean**
fair′-y	**thought**	**o′-pened**	**knows**
Christ′-mas	**wrapped**	**sail′-or**	**heard**

1. All boys and girls have heard of fairies, and on Christmas Eve, nearly all good boys and girls have a visit from a fairy called Santa Claus.

2. One night, before going to sleep, Mary was thinking about the nice things she would like Santa Claus to bring her, when she thought she saw a fairy standing quite close to her. She was not a bit afraid, but had a good look at him.

3. He was a little old man, wrapped in a big fur cloak, which covered him



SCENE IN ARCTIC REGIONS. ESKIMO AND DOGS.

from head to foot. Yet he did not seem warm, for his nose was quite blue with cold.

4. "Are you Santa Claus?" asked Mary. "No," was the reply, "I am the Fairy of the North, and I have been blown here by the cold north wind.

5. "I live in a part of the world where ice and snow are on the ground nearly the whole year. There, the days and nights are not about twelve hours long, as they are here.

6. "There are only a few people in those cold lands. They are short, not much taller than you are, and they live in houses made of snow and ice. They hunt white bears, seals, and whales for their food, and they live a very hard life.

7. "Yet I like being with them much better than being here. This is too warm for me. I must get back. Good-by."

"Good-by, Mr. Ice-and-Snow," said Mary.

8. Mary shut her eyes, and when she opened them, she saw that a young, good-

looking fairy had taken the place of the little old man. Mary liked her looks and said, "Please, who are you?"

9. "I am the Fairy of the East," she said, "and I came here on the east wind. My home is where the sun rises. I like the early morning best.

10. "The sailor after a long night at sea looks towards the east, and is glad to see the first rays of the sun throwing their red light over the ocean.

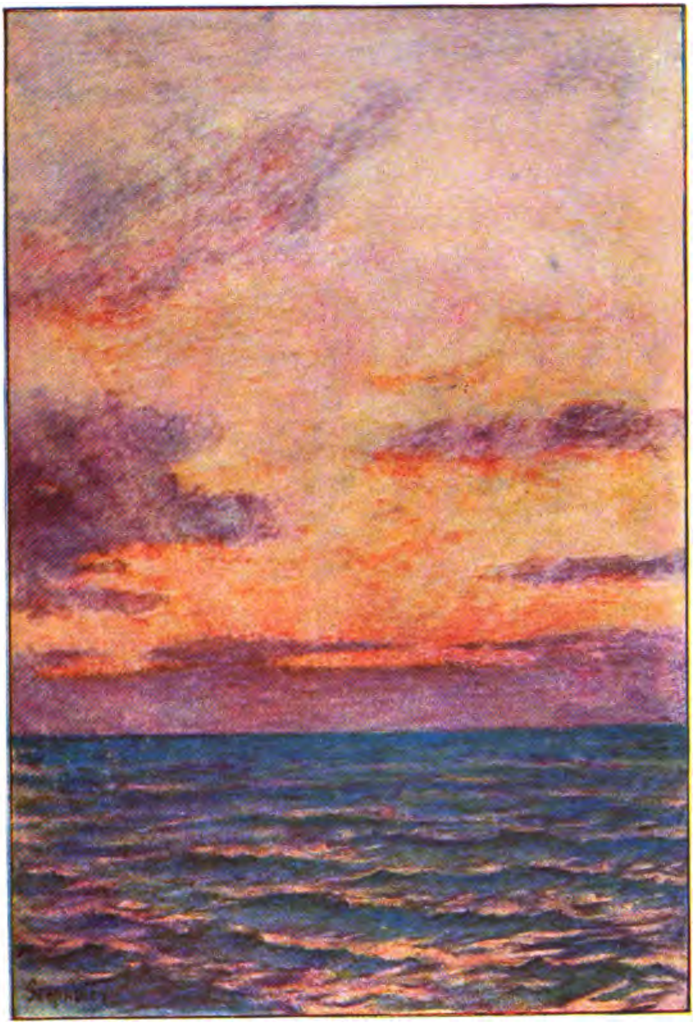
"He knows that the long, cold night is past, and that day is at hand."

LESSON 19.

TWO MORE FAIRIES.

ques′-tion
gen′-tle
tongues
col′-ors
won′-der
cli′-mate
wheth′-er
quick′-ly
clothes
coun′-tries
flow′-ers
or′-ange

1. Mary was just going to ask a question, when she looked up and saw that the place of the Fairy of the East had been taken by another fairy, who seemed very gentle and very old.



SUNSET AT SEA.

2. This fairy, when she saw Mary looking at her, said in a low, gentle voice, "I am the Fairy of the West, and I have come on the gentle west wind, from the land of the setting sun.

3. "When you stand on a cliff in the evening, and look westwards, towards my home, you see the sun go down like a ball of fire. Then tongues of fire shoot up into the sky and light up the clouds with many grand colors. Next the rays of light die away, and soon all is dark and still."

4. Mary knew that when it got dark, she was always sent to bed. She began to wonder whether the Fairy of the West had anything to do with this, when she felt somebody tap her on the arm.

5. Mary turned round and saw a very fine, large fairy, dressed in bright-colored, rich clothes. The fairy said, "Come with me."

6. Mary felt herself raised in the air, and found that she had to follow the fairy. She was afraid at first. They went

very quickly, much quicker than Mary had ever gone before.

7. "Oh, please, do stop!" cried Mary. "No, come along," said the Fairy of the South, for that was her name.

8. They went on and on, hundreds of miles. It grew warmer and warmer. At last they came to countries where it was very hot.

9. They now began to go slower, and Mary had time to look about her. The flowers she saw were very lovely, so were the birds, but they did not sing like the birds that Mary knew.

10. The trees were tall, and had very large green leaves, and nice fruits were hanging from some of them. Mary saw a ripe orange on one tree, and her mouth began to water.

11. She put out her hand to pick the orange from the tree. Instead of picking an orange, she woke with a start, for she had struck her hand against the bed-post. So the fairies were only a dream after all.

SCENE IN A TROPICAL FOREST.

LESSON 20.

A MAGNET.

com′-pass
un-der-stand′
pic′-tures
an′-i-mals
brought
fin′-ger
nee′-dle
stick′-ing
mag′-net
wood′-en
knife
pock′-et

1. Tom had begun to learn about maps and about the points of the compass. His father said that he would bring something home for him, which would help him to understand these lessons better.

2. Tom thought that his father might give him a book of maps like the one his big brother had, but he would have liked a book with plenty of pictures of men and animals, that live in far-off lands.

3. His father did not bring him either of these things, but he brought a piece of steel a little longer than Tom's finger.

4. Tom looked at it, and could not understand how that piece of steel could help him in his lessons.

5. He did not like it at all, and put it down on the table. When he took it up again, he saw that a needle, which

had been on the table, was sticking to one end of the piece of steel.

6. Tom thought this was funny, so he wiped the piece of steel to make sure that there was nothing sticky on it. Then he put one end of it again near the needle.

7. It picked up the needle as before. Then he found that the other end of the steel would also pick up the needle, but the middle would not pick it up at all.

8. "What a funny piece of steel!" said

Tom. "What is it called?" he asked. "It is called a magnet," said his father.

9. "I wonder if the magnet would pick up anything else," he said. "Suppose you try it on something else," said his father.

10. Tom tried, and found that the magnet would not pick up the cotton, although it had picked up the needle. It would pick up a steel pen, but not a wooden penholder. It would pick up a pocketknife by the blade, but not by the bone handle. Tom tried a great many other things, and found that his magnet would pick up a nail and a key, but would not pick up a penny or a dime.

11. In fact, the magnet would pick up anything that was made of iron or steel, but it would not pick up things made of anything else.

12. Tom thought that as the magnet was made of steel, perhaps one steel knife would pick up another one. He tried, but he found that one knife would not pick up another.

LESSON 21.

HOW TO MAKE A MAGNET.

piece
knit′-ting
rubbed
gen′-tly
clapped
float′-ed
point′-ed
win′-dow
al′-ways
to′-wards
some′-times
cot′-ton

1. "How do men make a piece of steel into a magnet?" asked Tom.

"They rub the piece of steel with another magnet," said his father.

2. Tom took one of his mother's knitting needles, and rubbed and rubbed the magnet upon it; but he could not make the knitting needle into a magnet.

3. "That is not the right way," said his father. "You must always rub the same way, either always backwards or always forwards, not backwards and forwards as you have been doing. Look at me."

4. His father put the knitting needle on the table, so that one end was near him, and the other end away from him. He put the magnet at that end of the knitting needle which was away from

him. He held the needle quite still, and drew the magnet gently along until the magnet came to that end of the needle near him.

5. He drew the magnet gently off from the needle, and began again at that end of the knitting needle which was away from him. Then he gave another rub towards him as before. He did this about six times.

6. "Now, Tom," said he, "see if this is a magnet." Tom tried, and clapped his hands when he found that the needle would pick up little things made of iron or steel, just as his magnet had done.

7. His father next placed this knitting needle on a large flat cork that floated on some water in a bowl. The cork with the needle upon it moved about at first, but soon became quite still. Tom saw that the needle pointed towards the window.

A FLOATING MAGNET.

8. Tom turned the needle and cork round, but very soon the needle stopped again, and pointed towards the window as before.

9. "I wonder if it is the same end that pointed last time," said Tom. His father tied a piece of cotton round the end of the needle which pointed towards the window, and moved the needle again. It soon became quite still, and the end with the cotton upon it pointed towards the window just as it had done before.

10. When Tom looked out of the window, he could see the church, which he knew was north of his house. So Tom learned how to find the north by the help of a magnet.

11. He next put on the cork a needle which had not been made into a magnet; but this needle pointed all sorts of ways, sometimes towards the window, sometimes towards the door, sometimes towards the fireplace. It did not always point the same way as the magnet had done.

LESSON 22.

MORE ABOUT MAGNETS.

stopped
rough
rough′-ness
rea′-sọn
pre-vent′
hang′-ing
be-gin′-ning
thread
sail′-ors
float′-ing
swing′-ing
breathed

1. Tom put the magnet on the table, to see if it would then point towards the north. But it stopped just where he had put it.

2. "My magnet does not point to the north now," he said. "Please, father, tell me why."

3. "Because," said his father, "the table is rough, and this roughness keeps the magnet from turning towards the north. The reason I put the magnet on a cork in water, was because the water was smooth, and did not prevent the magnet turning towards the north.

4. "I have here a little paper loop hanging by a thread of silk. I will put the magnet inside it."

5. The magnet was then hanging as you see it in the picture. It moved back-

wards and forwards for a long time, and just when Tom was beginning to get tired, it stopped still, and pointed towards the north, like the magnet on the piece of cork.

6. Tom then learned that the end of the magnet which pointed towards the north was called the north end or north pole. The other end, which of course pointed towards the south, was called the south end or south pole of the magnet.

7. Tom knew how to tell the north

by the sun, and he now learned how to tell the north by means of the magnet. That piece of steel which his father had brought him was helping him a great deal after all.

8. Tom's father next told him, that when sailors could see neither the sun nor the stars, they used the magnet in order to find the north.

9. Tom had been on the sea in a ship. It was quite fine and smooth when he started. Soon, however, the wind began to blow, and the ship began to rock, and poor Tom became seasick.

10. "But, father," said Tom, "they could not use the magnet floating on the cork as you have done. The ship would rock, the water in the bowl would rock too, and the magnet would never get quite still.

11. "And they could not use the magnet hanging by the thread, for the wind would blow it about. Why, when I watched the magnet swinging on the thread, and I thought that it had stopped

swinging, I breathed very hard, and that started the magnet swinging again."

12. "You are quite right," said his father, "neither the floating magnet nor the hanging magnet is used at sea."

"Then what is used, father?" asked Tom.

"Well, my son, I will take you on board a ship, and you shall see for yourself," said his father.

LESSON 23.

THE SCHOOL COMPASS.

PART 1.

cup′-board	**thought**	**com′-pass**	**be-cause′**
an-oth′-er	**ex-cept′**	**helped**	**proud**

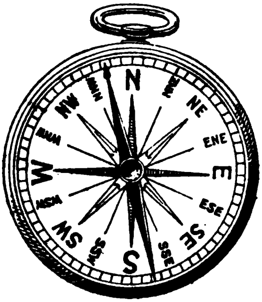
1. One day, the teacher brought from the cupboard something that looked like a clock.

2. "How tiresome!" thought all the boys; "another lesson on how to tell time, simply because Jack Lazy can tell only twelve o'clock."

3. "Please, sir, is that a clock?" asked

one of the boys. "Well, look at it," said the teacher.

4. The boys saw that it had only one hand, and that, instead of numbers, the face had the letters N, S, E, and W, which they knew stood for north, south, east, and west. They listened for the tick, tick, of a clock, but could not hear any sound coming from it, so the boys felt sure that it could not be a clock, unless it had stopped, as clocks sometimes do.



A POCKET COMPASS.

5. The teacher asked them what they thought it was, and one of the boys said, "I think it must be something which helps men to find out the north, for it has N for north on the face, and the *hand* is just over the N."

6. "That is quite right," said the teacher. "It is called a compass, and what you have called the 'hand' is known as the needle." The teacher took the

glass cover off, and moved the needle round.

7. The needle moved backwards and forwards, but at last it stopped still and pointed towards the north.

8. "I know what the needle is," said Tom. "It is a magnet, and it will always point to the north."

9. "Well done, Tom," said the teacher. "Where did you learn that?" "My father gave me a magnet," said Tom, "and he helped me to find out something about it."

10. Tom told all that he knew about a magnet, and was quite proud when his teacher let him show the other boys how to make a magnet, and how to float it on a cork on water.

11. All the next week, the boys in their spare time were making magnets, putting them on corks and floating them on water.

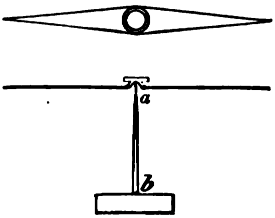
LESSON 24.

THE SCHOOL COMPASS.

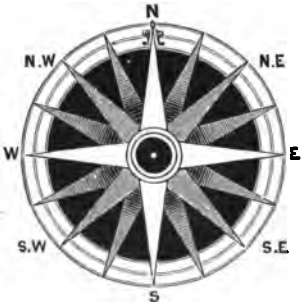
Part 2.

pic′-ture
mid′-dle
thought
bro′-ken
eas′-i-ly
fit′-ted
mov′-ing
an′-swer

1. In the next lesson, the teacher again took off the glass cover of the school compass, but instead of swinging the needle round, he lifted it right up. The boys saw that a little pin was sticking up from the middle of the card.



A COMPASS NEEDLE BALANCED ON A PIVOT, *a b*.



THE FACE OF A COMPASS.

2. "What a pity!" thought Tom, "the compass is broken."

3. But it was not broken, for when

the needle was turned upside down, a little cup could be seen, just as you see it in the picture. The inside of the little cup rested on the needle, and let the needle swing round easily.

4. The boys then went over the names of the parts of the school compass. The chief thing was the needle, which must be a magnet. In the middle of this needle there was a cup turned upside down. The cup fitted over a short peg or pin, which stuck up from the middle of the compass card.

5. This card had on it a number of letters, which are called the points of the compass. The needle with its cup, the peg, and the card were shut up in a box which had a glass top or cover.

6. They next learned how to use the school compass. First, they placed it flat on the table, with the glass cover on top. The needle moved backwards and forwards, but at last became still, and pointed to the north. They then moved the box gently round. The compass card moved

round with the box, but the needle stopped quite still.

7. When the N on the card came under the N on the needle, they stopped moving the card. They then saw that the S on the card was towards the south, the E towards the east, and the W towards the west. But there were some other letters on the card, and they wanted to know what they meant.

8. So the teacher taught them that the letters NE were short for north-east, which meant half-way between north and east. They learned too what southeast, southwest, and northwest meant.

9. The teacher said that next morning he would ask them to tell him which way the wind was blowing. All the boys looked at the vane and got the right answer, except Willy Late, who had not looked at the vane at all, and said, "Northsouth, sir," at which everybody laughed.

LESSON 25.

A SHIP'S COMPASS.

for-get′
prom′-ise
wheel
steer′-ing
fas′-tened
rud′-der
eas′-i-er
rock′-ing
up′-right
how-ev′-er
washed
o′-ver-board

1. Tom did not forget his father's promise to take him on board a ship. He wanted very much to see a real compass such as sailors use. Soon after they got on board, the ship started.

2. Tom's father took him to the stern of the ship, and there he saw a man slowly turning a large wheel. First the man turned the wheel a little one way, and then he turned it a little the other way.

3. "What is he doing, father?" asked Tom. "He is steering the ship," said his father. "That wheel is fastened by a chain to the rudder, and it is the rudder which guides the ship."

4. In front of the man who was steering, there was a kind of box on a stand, something like the one in the picture.

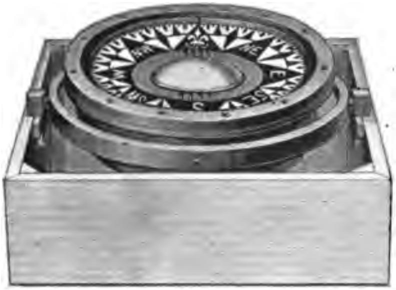
5. Tom looked through the glass face, and saw inside what looked like a card.

6. "Why, father," said Tom, "that must be the compass, for I can see upon it the same letters I saw on the school compass." "That is right," said his father.

7. "But I cannot see the needle," said

Tom, "and the card is not still, but keeps moving first a little to one side, and then a little to the other."

8. "The needle is stuck under the card," said his father, "and when the needle moves, it carries the card round with it. This kind of compass is easier for the sailor to use than your school compass would be."



MARINER'S COMPASS.

By permission. From Frye's Complete Geography.

9. The ship was now rocking a great deal, and Tom could hardly stand upright.

10. But he saw that, however much the ship rocked, the compass card always kept level. His father told him that this was because the compass card was hung on pegs in such a way that, however much the ship might move, the compass card would always keep level.

11. Tom saw that the man at the

wheel kept looking at the compass, and he understood that the compass told the man which way the ship was going.

12. "Does a man always have to stand there and guide the ship?" asked Tom. "Yes, always," said his father; "even in very great storms, the man at the wheel must stand at his post. Sometimes the sea sweeps right over the deck, and then the man has to be tied to the wheel, so that he may not be washed overboard."

LESSON 26.

"TO LET."

side′-walks	**draw′-ing**	**num′-ber**	**lived**
flow′-ers	**path′-way**	**a-cross′**	**en′-trance**
let′-ters	**e-nough′**	**called**	**larg′-er**
al-though′	**rul′-er**	**twelve**	**bet′-ter**

1. Near the edge of the town in which Tom lived was a large park. It was a lovely place, with its thick, cool, green grass, its many fine trees, its beds of bright flowers, its strange plants, and its well-kept walks.

2. Tom came home from the park one

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day full of news about it. A large board with printing on it had been put up near the main entrance, and at the top of it, in big letters, stood the words, "TO LET."

3. Tom could not read all the words on the board, but he saw that houses were to be built, and that the land was to be let in plots.

4. "What a shame it is to build on that nice park," he said. "The park makes that end of the town quite pretty."

5. "Yes, it is a pity," said his father, "although I mean to build a new house there myself."

6. Tom's grief went at once. "That will be nice," said he.

7. "I must see about the plans, too," said his father, "for we shall want a larger and better house than this."

8. "What are plans, father?" asked Tom, who had seen the word "plan" on the board in the park.

9. "A plan is a drawing," said his father. "You saw one on the board, did you not?"

"Yes," said Tom, "but I did not know what it meant."

10. "Well, that plan on the board shows how many new streets there are to be, the names of the streets, which way they go, their length and width, and how wide the sidewalks are to be," said his father.

11. "But how can all that be put on a board?" asked Tom. "The board is not big enough."

"Yes, it is, my boy, if the plan is drawn to scale," said his father.

12. "Drawn to scale," said Tom; "please tell me what that is."

His father took up a flat ruler that lay on the table. A number of lines were drawn straight across it. Some other lines were drawn only halfway across, and there was also a number of very little lines upon it, which were all drawn close to one another.

13. "The space from one big line to the next is called an inch," said his father. "Count the spaces, Tom."

Tom did so, and found there were twelve.

"Twelve inches make a foot," said his father; "so the ruler is just one foot long."

LESSON 27.

PLANS.

draw′-ing
pa′-per
straight
breadth
meas′-ure
length
i-de′-a
ob′-ject
turned
placed
moved
sim′-ple
to-geth′-er
called
him-self′
liked

1. Tom's father next took a sheet of drawing paper, and asked him to note that the paper was very much smaller than the table.

2. "I am going to draw the plan of the table on this paper," said his father; "and first we will find out the length and breadth of the table itself."

3. With the aid of the ruler the table was found to be four feet long.

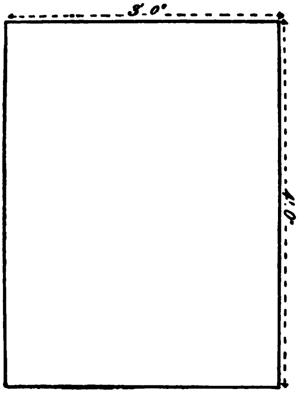
4. "Now, I will draw a straight line four inches long on the paper, and let it stand for the length of the table," said his father. "Then for every foot of length

in the table, there will be one inch on the paper."

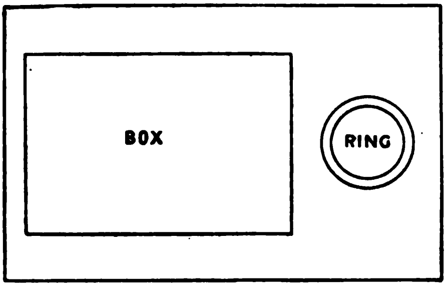
"Yes, I see," said Tom.

5. "Well, that line is drawn to the scale of one inch to a foot," said his father.

6. The breadth was found to be three feet. So another line, three inches long, was drawn from one end of the first one, and square with it.



PLAN OF A TABLE.



7. "There is no need to measure the other two lines," said his father. "We know their lengths, and can put them in at once."

8. And so the plan of the table was drawn, and Tom had a very fair idea of what drawing to scale meant.

9. "When the things you wish to draw are smaller than the paper on which they are to be drawn, it is very easy to draw a plan," said his father. "All that need be done is to place the object on the paper, and draw lines close round it. There is no drawing to scale in such cases."

10. His father turned the paper over, placed a small box on it, and drew the lines round it, close up to the box, as he had said. When the box was moved, Tom saw its plan on the paper.

11. The work was new to Tom, and he liked it, so he was soon busy drawing the plans of all the simple objects he could find.

12. "Now take two objects together," said his father, "and draw their plans."

13. In a very short time, Tom had drawn the plans of a box and a ring.

14. "Now let us see what the plan

tells us," said his father. But just then he was called away, so Tom tried to find out what he could learn from the plan by himself.

LESSON 28.

THE NEW GARDEN.

ob′-jects
po-si′-tion
dreamed
di-rec′-tion
draw′-ing
gar′-den
hun′-dred
eigh′-ty
pa′-per
al′-ter
flow′-ers
in′-side
path′-way
be-gan′
ten′-nis
quar′-ter

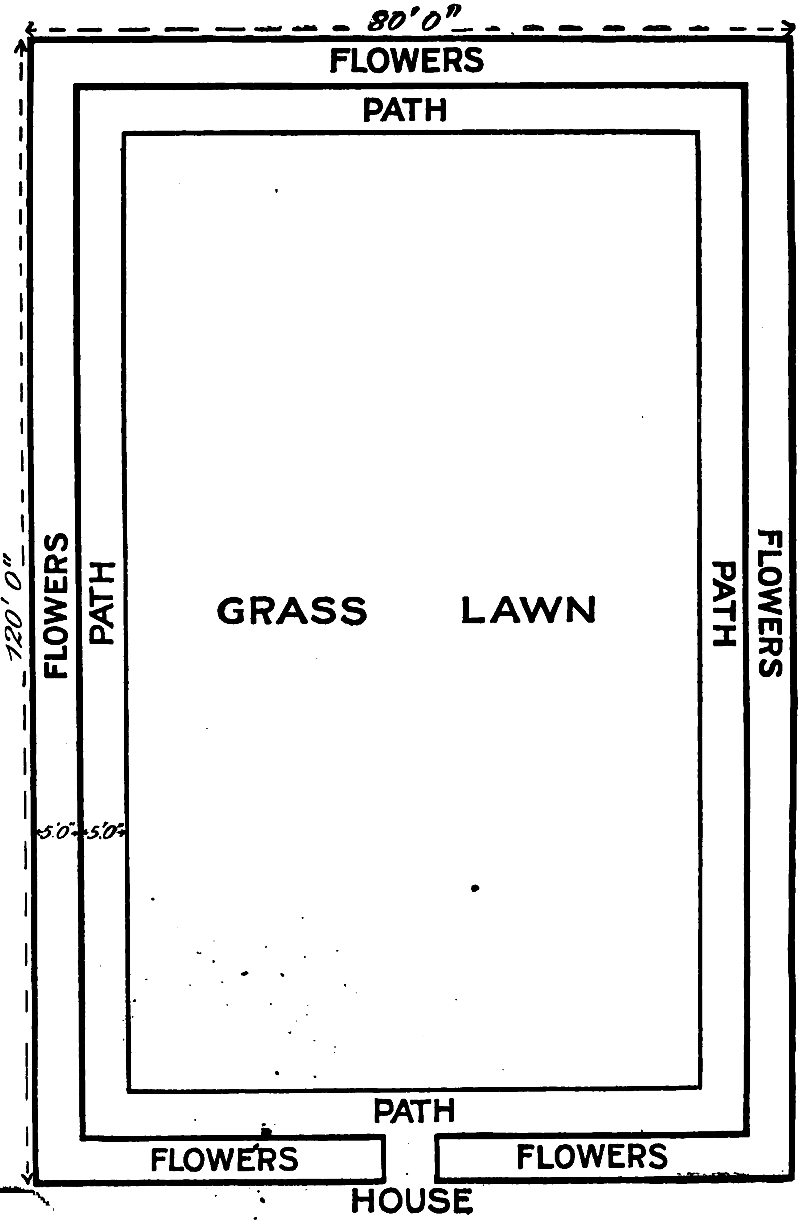
1. In a short time his father came back. "Well, what does the plan tell you?" asked he.

2. "It shows the shape and the size of the objects," said Tom; "but I cannot see what else it does."

3. "Does it not tell you the position of the objects?" asked his father.

4. "Yes, it tells me that the box and the ring lie some little way apart from each other," replied Tom.

5. "It also tells you direction, does it not?" asked his father. "It tells you in what direction the ring lies from the box."


80'0"
FLOWERS
PATH
120'0"
FLOWERS
PATH
GRASS LAWN
PATH
FLOWERS
5'0"
5'0"
PATH
FLOWERS
FLOWERS
HOUSE

6. "Oh, yes," said Tom; "and, now I think of it, the plan on the board at the park entrance showed the direction of all the roads."

7. The next day Tom saw his father drawing the plan of something. "Is that the plan of the new house?" he asked.

8. "No, my boy; it is the plan of the garden. We shall have a fine large garden," said he. "It is to be a hundred and twenty feet long, and eighty feet wide. Come now, you shall try to draw its plan. The scale had better be a half inch to ten feet."

9. "Oh, but we had one inch to one foot, last time," said Tom.

10. "Yes, but that would be too large for the plan of the garden," said his father. "We should want a line a hundred and twenty inches long, and the paper is not large enough."

11. "But can you alter the scale to what you like?" asked Tom.

12. "Yes, we can draw to what scale we like," said his father.

13. "Then the length of the plan will be six inches, and its breadth four inches," said Tom.

14. "Just so," said his father; "and we are going to have a breadth of five feet from the wall, all the way round, to grow flowers," said his father; "so you must draw a line one quarter of an inch inside the other lines, all round the plan."

15. "We shall have a fine lot of

flowers," said Tom, who soon had the lines drawn in.

16. "I hope so," said his father. "Then I think of having a pathway right round the garden, five feet wide also."

17. "Oh, that will be a quarter of an inch inside the last lines," said Tom, who at once began to put the lines in.

18. "The rest of the garden will be a nice grass lawn," said his father, "so that we can have a tennis court."

19. All that night Tom dreamed of plans, gardens, and games on the grass in which Jack Lazy would not play.

LESSON 29.

FOREIGN LANDS.

cher′-ry
for′-eign
pleas′-ant
dim′-pling
tramp′-ing
fair′-y
far′-ther
high′-er
play′-things

1. Up into the cherry tree,
Who should climb but little me?
I held the trunk with both my hands,
And looked abroad on foreign lands.

2. I saw the next door garden lie,
With all its flowers, before my eye,

And many pleasant places more
That I had never seen before.

3. I saw the dimpling river pass,
And be the sky's blue looking-glass;

The dusty roads go up and down,
With people tramping in to town.

4. If I could find a higher tree,
Farther and farther I should see,
To where the grown-up river slips
Into the sea among the ships,

5. To where the roads, on either hand,
Lead onward into fairy land,
Where all the children dine at five,
And all the playthings come alive.

ROBERT LOUIS STEVENSON.

LESSON 30.

JACK LAZY DRAWS A PLAN.

not′-ed
be-gan′
meas′-ure
twelve

rul′-er
class′-room
twen′-ty
win′-dows

be-sides′
tired
fin′-ish
your-self′

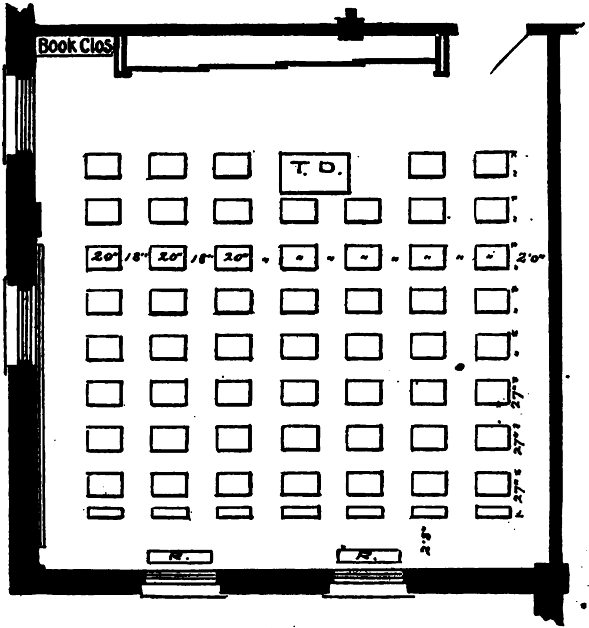
com′-pass
scale
quar′-ters
be-tween′

1. Tom's head was full of plans. He drew plans of the rooms, of the house, and of some of the things in the house.

2. His father gave him any help that he might need, and noted, with some pride, how neat and clean the plans were.

3. The other boys began to draw plans too. Fred Keen, like Tom, did them well. Even Jack Lazy thought he would like to draw one, if the boys would measure the lengths for him. "It is by no means bad fun," said he, "because you can sit down to it."

4. But the boys told Jack that he must measure for himself, and so it came about that one day Jack Lazy was seen with a twelve-inch flat ruler going round the walls of the classroom, to find out the length of each.



PLAN OF A CLASSROOM.

5. Jack found that the room was twenty-six feet by twenty-five; he took the scale of one inch to eight feet, and drew his plan.

6. "Where's the door, Jack?" asked Tom, "and what have you done with the windows? Your room is nothing more than a big box, with no air and no light."

7. "I never thought about that," said Jack. "Besides, I was tired when I had found the size of the walls. Here, you finish it, Tom."

8. "No, you must do it yourself," the boys said. And so Jack had to measure the door and the windows.

9. "Now, Jack," said Tom, "before you put in the door and the windows, you had better put in the points of the compass, and then we shall not have the plan upside down."

10. Jack knew nothing about the points of the compass. In class he was too idle to learn anything. The boys knew this, and so they put the points of the compass into the plan for him.

11. The door and the windows were each three and a half feet wide. This gave ($\frac{7}{16}$) seven-sixteenths of an inch for the door and for each window.

12. "How much space is there between each window?" asked Fred Keen.

13. "I don't know," said Jack. "Plans may be easy, but there is a great deal of work in them." Jack, in his idle way, had not thought of the spaces, and so once again his flat ruler was brought into use.

14. Jack measured the spaces between the windows, and the distances from the windows to the end of the wall, and then they put the windows in the plan.

LESSON. 31.

PLAN OF A CLASSROOM.

feel′-ing
an-oth′-er
be-tween′
wheth′-er
vexed
ex-act′
rul′-er
count′-ed
num′-ber
fad′-ed
a-sleep′
desks
a-fraid′
sor′-ry
fin′-ished
cor′-ner

1. "Well, we have made a room out of your big box, Jack," said Fred Keen; "but there are no desks yet. There must be desks to sit at."

2. "Oh, yes!" said Jack with much

feeling. "But I know where the desks go."

3. "Yes, but do you know the size of each desk, how far one desk is in front of another, what space there is between the desks, how far the desks are from the walls, how many desks there are, and whether they are all the same size?" asked Fred Keen.

4. "I don't know, and I don't care," said Jack Lazy in a pet. "I would never have tried to draw the plan, if I had known there was so much work in it. Why can't we guess at the desks? We know how many there are, and where they stand."

5. "Don't be vexed," said Tom. "You will draw your plan yet, and when it is done, you will feel proud of it. We could guess the size of the desks and their places, but then we should have a rough plan only. We want an exact one."

6. And so poor Jack had to do some more work the next day. He took his

flat ruler and found out the size of one desk, and then, to make sure, counted the number of desks.

7. Then he found the space between the desks and the wall. He sat down near the wall, and leaned his back against it. The plan faded out of his mind, and soon he fell asleep.

A CLASSROOM.

8. When the boys met that night to go on with their plans, Jack was in fault again. He had not all the sizes and

spaces that he ought to have had, and so he could not do much at the plan.

9. "Never mind," said Tom. "I was afraid you might fall asleep before the work was done, and so I did it myself."

10. "That was very kind of you, Tom," said Jack; "for you know work does not suit me."

11. "I know you are idle, and I know that you will be sorry for it some day, when——"

But Jack had gone to sleep again!

12. The boys finished the plan, and wrote Jack's name down in the corner. Jack never spoke again about his plan.

LESSON 32.

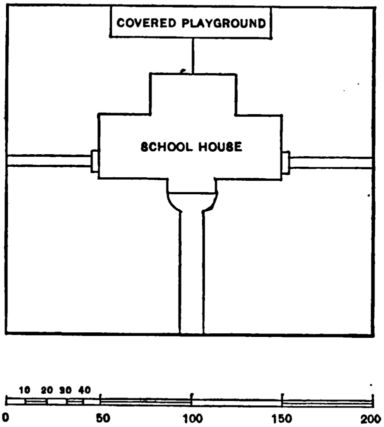
MORE PLANS.

draw′-ing
play′-ground
un-til′
fin′-ished
watched
at-ten′-tive-ly
could
wind′-ing
val′-ley
right
town
cir′-cle
cen′-ter
ei′-ther
patch
li′-bra-ry

1. Tom's father was glad to see that his boy was fond of drawing.

2. "You might make a plan of the school

and playground,” said his father. “It will take you some time to get the lengths of all the walls, floors, and spaces, but it will make a good drawing when it is done.”



PLAN OF SCHOOL AND PLAYGROUND.

3. Tom was only too glad to do it, and so his father lent him a two-foot rule. Tom took the rule to school with him each day, until he had the lengths of all the walls and spaces.

4. The plan was then drawn to scale, and very neat and nice it looked when finished.

5. “In such a plan, the desks can be shown only as straight lines,” said Tom.

6. “That is because the scale is so small,” said his father. “The larger the space to be drawn the smaller the scale.

Now let me make for you a rough plan of a place that you know very well."

7. Very attentively Tom watched his father as he drew the plan. What could these lines and marks mean? he asked himself. After a few minutes he said, "Is that broad, winding line a river, and are those little marks for trees?"

8. "Yes," answered his father, "this line represents a river winding through a valley."

9. "Then," said Tom, "this must be a plan of our town."

10. "But," replied his father, "do you suppose our town is the only one situated on a river in a valley?"

11. "Oh, no," said Tom, "but this river winds about just as our river does above the clubhouse."

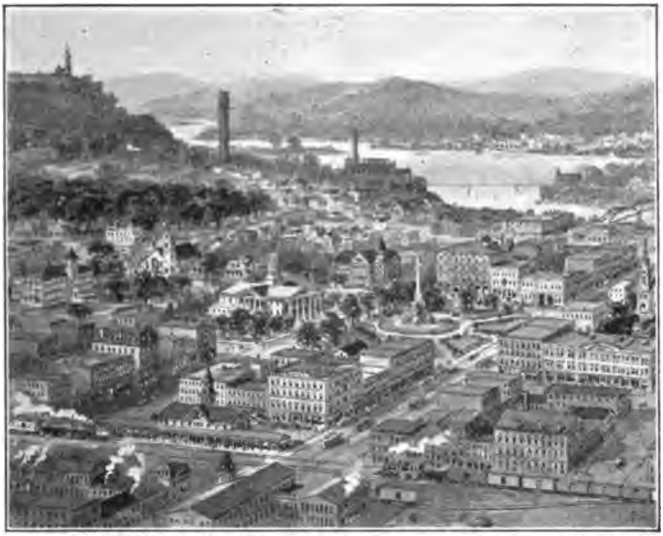
12. "Show me, if you can, where the clubhouse should be, if this is our river."

13. "Right here," said Tom, "not far from the first bend as you go up the river."

14. "Very well," said his father, "we will make a mark here for the clubhouse, for you are right, this is our own river

and town. Now let us see if you know what some of the other lines mean."

15. Tom drew the plan towards him. After a little study he said, "These long lines with the circle between them look like Center Street, Bridge Road, and Monument Circle."



A VIEW OF THE TOWN.

16. "You are doing very well," said his father. "Now, if this is Center Street, what are these square blocks on either

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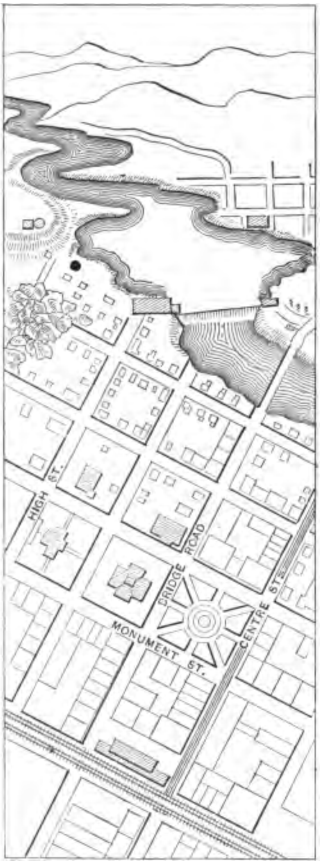
No.

side of the street?" Tom thought they must be shops and houses.

17. "Here is a large building in a square," continued his father; "do you know anything like it?"

18. "Yes," replied Tom, "the public school is in a square like that not far from Bridge Road."

19. "This dark patch with a small square on the corner stands for a church. Is there any church near the school?"



A PLAN OF THE TOWN.

20. "Yes," said Tom, "the Eliot Church is very near."

21. "Very good," said his father. "You

are finding out the meaning of these marks on the plan."

22. "I understand some of them," replied Tom, "but here is a mark which I do not understand. What is this, not far from the church, in a square something like the school square?"

23. "Well," answered his father, "what large building standing quite alone is near the Eliot Church and the schoolhouse?"

24. Tom thought for a moment, then said, "This must be the city hall, and there is the public library directly across the street. Between the church and the river," he continued, "are houses, so I suppose these little marks are for the houses. Mr. Stevens lives in this street, but I can't tell in which house."

25. "No," said his father, "the plan is too small to show each house by itself. Do you remember any buildings over on the hill?"

26. "Oh, yes, the factory, the water-tower, and the observatory, and here they are on the plan," said Tom.

LESSON 33.

BLOCK PLANS.

di′-a-gram
sec′-tion
po-si′-tion
streets
prin′-ci-pal
build′-ings
port′-fo-li-o
li′-bra-ry
church
hous′-es
be-cause′
rough
sketch
helped
bul′-le-tin
va′-ri-ous

1. The next day Tom came home from school with some new work to do. Mr. Stevens had asked each of the boys to bring him a diagram of a section of the town. The diagram was to show the names of the streets and the principal buildings.

2. "What part of the town are *you* to represent?" asked his father.

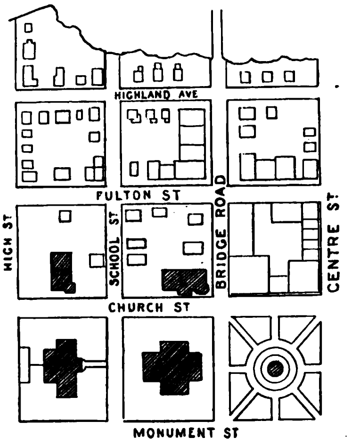
3. "My plan," replied Tom, "is to show from High Street to Center Street, and from the river to Monument Street. I am glad Mr. Stevens gave me that part of the town to do, for I shall have a church, the library, the schoolhouse, the city hall, the monument, and the river in my section."

4. "Are you to show houses in the diagrams?" asked his father.

"Yes, if we like."

5. "What is to be done with all of these diagrams when they are finished?" asked his father.

6. "The best ones," said Tom, "are to be put up on the bulletin board. Mr. Stevens said he hoped all of the plans would be very good, because he would like to put them together and so show the whole town."



A BLOCK PLAN.

7. Tom set to work to make the diagram. Mr. Stevens had given the boys the measurements from street to street, and they knew how to draw to scale. The sketch of the town which his father had made helped Tom to understand just what he was to do.

8. When Tom's diagram was finished, his father examined it carefully and said,

"I think this one will be put on the bulletin board. Now, Tom, let us look over the various plans which you have drawn." Tom took from his portfolio the drawings he had made.

9. "Suppose," said his father, "we arrange these on the table in the order in which you made them. No. 1 is the plan of the schoolroom. It shows you the shape and size of the room, the number, the size, and the position of the doors and windows. Although this is a very simple plan, yet it tells you several things.

10. "Now let us place No. 2 next to it. Here we have the schoolhouse with the playground. No. 1 shows but a single room; No. 2 shows the whole building and the grounds. In No. 2 we find much more than in No. 1.

11. "This plan of the town which I made for you we will place next and call it No. 3. In this one we have the river, the church, the schoolhouse, and other buildings. This one, you see, shows still more than either No. 1 or No. 2.

12. "Now we come to No. 4, the section of the town which you have just made. A diagram of this kind is sometimes called a block plan. It shows you still more than either of the others. In such a plan you will find the names of the streets and the direction in which they run, private houses, churches, school buildings, fountains, monuments, parks, and whatever you would see in that particular section of the town or city.

13. "When Mr. Stevens puts together in the proper order all of the diagrams or block plans which the boys bring him, he will have a *map* of the town. A map, you now understand, is a very large plan of a town or city or country, or even of many countries together, and it is always drawn to scale.

14. "Some day soon I will show you some maps. Now that you have learned something about the different kinds of plans, and how to make them, you will easily understand maps. I am sure you will find them interesting."

LESSON 34.

BLOCK CITY.

cas′-tles
pal′-ac-es
tem′-ples
scat′-tered
car′-pet
ves′-sels
pil′-lar
or′-der-ly
sail′-ors
re-mem′-ber
build′-ing
so′-fa

1. What are you able to build with your blocks?
Castles and palaces, temples and docks.
Rain may keep raining, and others go roam,
But I can be happy and building at home.

2. Let the sofa be mountains, the carpet be sea,
And there I will build a city for me:

A church and a mill and a palace beside,
And a harbor as well where my vessels
may ride.

3. Great is the palace with pillar and
wall,
A sort of a tower on the top of it all,
And steps coming down in an orderly
way
To where my toy vessels lie safe in
the bay.

4. This one is sailing, and that one is
moored:
Hark to the song of the sailors on
board!

And see on the steps of my palace, the kings
Coming and going with presents and things!

5. Now I have done with it, down let it go!
All in a moment the town is laid low.

Block upon block lying scattered and
free,
What is there left of my town by the
sea?

6. Yet as I saw it, I see it again,
The church and the palace, the ships
and the men,
And as long as I live, and where'er I
may be,
I'll always remember my town by the
sea.

ROBERT LOUIS STEVENSON.

LESSON 35.

MAPS.

PART 1.

be-fore′	**puz′-zled**	**Dan′-ish**	**an′-swer**
care′-ful-ly	**French**	**Lat′-in**	**queer**
sci′-en-tist	**Span′-ish**	**nap′-kin**	**eas′-i-er**

1. "Before we study these maps carefully," said Tom's father, "let us talk a little about the word 'map' and what it means. Let us find out, if we can, where

the word comes from—where it was born, if you like—and how old it is."

2. Tom looked puzzled. He had never thought of the birthplace or the age of a word. Suddenly his face brightened—"Do words have birthday books too?" he asked.

3. "Not exactly birthday books," answered his father, with a smile. "There are books, however, which tell us many interesting things about words, though they do not always tell us precisely how old the words are."

4. "Do any of these books say anything interesting about the word 'map'?" asked Tom.

"Yes," replied his father; "this one tells us that French, Spanish, Portuguese, Danish, Italian, and other children have the word 'map' in their languages. Indeed, our word 'map' comes from the Latin *mappa*."

5. "Does *mappa* mean the same thing as 'map'?" asked Tom.

"I am glad you asked that question,

my boy," said his father, "for it brings us directly to something very interesting. No, the old word *mappa* means a napkin or tablecloth, while our young word 'map' means a plan."

6. "I don't think that a map and a napkin are anything alike, do you, father?" asked Tom.

"I wish you would try to answer that question for yourself," said his father. "I think there must be *some* way in which a map is like a napkin or cloth; let us see if you can find it."

7. This was like a new game, and Tom set to work with a will. Lest he should forget just what he was to look for he brought a fresh napkin from the sideboard drawer, unfolded it, and placed it beside the maps. For a few minutes Tom looked quite like a little scientist as he studied closely the maps on the table and tried to see how any of them, large or small, was in any way like a napkin or cloth.

8. The wrinkles that began to gather

in his forehead said this new game was not so easy after all. If his father had only asked him to point out the *differences* between maps and napkins it would have been so simple, he said to himself. He was beginning to grow discouraged. He was sure he did not care for this kind of a game.

9. Just then he spied for the first time a large map. He drew it towards him and found it was fastened to the cover of a small book.

10. "How queer," said Tom, "the largest map here is in the smallest book."

"Are you quite sure?" asked his father.

"Very sure," replied Tom.

"How can that be?" inquired his father. "I should think a large page in a small book would be very inconvenient and would be easily torn."

11. "But see," said Tom, placing the four corners of the map together, "it folds up just like this—just like a handkerchief or a—napkin or tablecloth," added Tom quickly, with a smile, for he

had found at last *one* way in which a map might resemble a cloth.

12. "Well done, Tom," said his father, "you see you have answered your own question. Next time you will find it easier to do so."

Tom helped his father gather up the maps and books, thinking, as he did so, this new game of words was not so dull after all.

LESSON 36.

MAPS.

Part 2.

al-read′-y
wav′-y
va′-ries
cap′-i-tals
dis-tin′-guish
moun′-tains
New York′
o′-cean
cer′tain
dis′-tance
com′-pass
sto′-ries
weath′-er
val′-leys
Al′-ban-y
prompt′-ly

1. The next evening, after dinner, Tom's father took from his pocket some papers. One of them he unfolded very carefully and spread on the table. "See what a fine map this is," he said. "I am sure it has something interesting to say. I never tire of hearing the stories maps tell."

LESSON 33.

BLOCK PLANS.

di′-a-gram
sec′-tion
po-si′-tion
streets
prin′-ci-pal
build′-ings
port′-fo-li-o
li′-bra-ry
church
hous′-es
be-cause′
rough
sketch
helped
bul′-le-tin
va′-ri-ous

1. The next day Tom came home from school with some new work to do. Mr. Stevens had asked each of the boys to bring him a diagram of a section of the town. The diagram was to show the names of the streets and the principal buildings.

2. "What part of the town are *you* to represent?" asked his father.

3. "My plan," replied Tom, "is to show from High Street to Center Street, and from the river to Monument Street. I am glad Mr. Stevens gave me that part of the town to do, for I shall have a church, the library, the schoolhouse, the city hall, the monument, and the river in my section."

4. "Are you to show houses in the diagrams?" asked his father.

stories told by maps. What could his father mean?

4. "Are you in earnest, father?"

"Very much in earnest, my boy."

"Even if maps can talk," said Tom, after thinking for a moment, "I don't see what they have to talk about."

5. "One reason why they are so interesting," said his father, "is because they have so *many* things to talk about. Here is one which is very much like some people; it always talks of the weather. If you listen to it for a few minutes, you will hear all about the heat or the cold, the fine weather and the storms in all parts of the United States. These maps are called weather maps, and they are very interesting. I think if you ask Mr. Stevens to do so, he will have one posted daily in your schoolroom where the boys can see it and learn to read it."

6. "What does *this* one talk about?" asked Tom, taking up quite another kind of map.

"This one," said his father, "tells us of very many things—of the ocean and of the land, of mountains and valleys, of rivers and lakes, of cities and towns.

7. "It tells us, too, how far one place is from another and in what direction. From this scale of miles in the corner, I think you can easily find out about how far it is from New York to Boston, or from Albany to West Point. Some time ago you learned about the points of the compass. In looking at a map, remember always that the top of a map is north, the bottom south, the right hand east, and the left hand west. Let us see if you can find a large city north of New York."

8. "How shall I know a large city from a small one?" asked Tom.

"The large cities are printed in large letters. The small cities in smaller letters."

"Albany is printed in large letters and is north of New York; is that right?"

"Yes, quite right, Tom."

9. "What are all of these little circles near the names of the towns?" asked Tom.

"The circle shows the exact position of the town," explained his father. "The *name* does not always do so. Look at Philadelphia. The *circle* is on the river, but the name is some distance from the river. In looking on a map for a city, we look first for the *name* and then for the circle. Now find the circle or some other mark for Albany."

10. After a moment Tom said, "Here is a mark near Albany, but it is not like the circle near the other cities."

"How does it differ?" inquired his father. "It is more like a star. Something like this," he added, as he drew one.

"Try to find another one like it," said his father.

11. Tom was beginning to think Albany was the only city which had a mark of that kind. Then he found that Boston, Concord, Hartford, and Trenton each had a star.

12. "What State do you live in?" asked his father.

"In New York State," answered Tom promptly.

"Do you know what city is the *capital* of New York State?"

"Yes, sir; Albany is the capital."

"Quite right, Tom. Every State or country has a capital, and every map has a certain mark to distinguish the capital from the other cities. You see how easily you can find for yourself all of the capital cities when you know map language.

13. "But we are talking so much ourselves we do not give the map an opportunity to talk. I am sure it has something to say about the country and about the seashore and the ocean. What rivers and mountains that you have seen, do you remember?" asked his father.

14. "I remember the Hudson River and the Catskill Mountains," said Tom.

"Won't you try to find the Hudson on the map?" asked his father.

After a few minutes, Tom said, "I wonder if this can be it. Here is a tiny wavy black line all the way from New York to Albany. On one side of it is printed Hudson River."

15. "Yes, that is the beautiful Hudson. It looks rather small on the map, does it not? Do you see any other tiny wavy black line which you think may be a river?"

16. Again Tom bent over the map. "Here is one," he said, "not far from the Hudson. It is very crooked, and doesn't seem to know which way to go, for it bends to the left and right, and left and right again."

17. "Are there any cities on this very crooked river?" asked his father.

"Yes, sir; one large one, printed in big letters—Philadelphia."

"The river must be the Delaware. Do you see the name?"

Again Tom found the tiny black line, and began to spell Delaware.

18. "That is it," said his father. "Now

tell me whether the Delaware is east or west of the Hudson."

"It is *west* of the Hudson, for it is to the left of it."

"That is right. I see you will be able to help me when I have to look up places on a map.

19. "These thick, shaded dark lines and patches are mountains and hills. A small map like this cannot show you all of the rivers, brooks, and valleys, and the beautiful places in the mountains. You know they are there because you have seen them, and you think of them when you look at the map and see the dark lines which show the mountains.

20. "These black wavy lines tell us of the ocean and the seashore. So now you see how the map can talk to us and tell us many things that we need to know."

LESSON 37.

WEATHER SIGNALS.

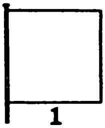
sig′-nals
weath′-er
wheth′-er
great
raise
ea′-ger
mem′-ber
so-ci′-e-ty
or′-gan-ize
fur′-nish
prompt′-ly
moth′-ers
pic′-ture
di-rec′-tions
col′-or
tem′-per-a-ture

1. One day Tom came home from school in great excitement. After showing the boys a weather map, Mr. Stevens had told them about the weather signals and how they are used. The boys were eager to organize at once a School Weather Bureau which would furnish a set of five signals. The members of the society would each take his turn in raising the signal promptly at 8.30 A.M. on the school flagstaff.

2. Even Willie Late thought he could get to school in good time if he were a member of this club.

The boys were sure their mothers and sisters would make the flags for them. To each boy who thought he could have a flag made at home Mr. Stevens gave a picture of one of the signals. With the picture were the necessary directions for size, color, and material.

3. Tom told his mother all about the new society, and asked her to make a signal for him. She was very much pleased with the plan, and began at once to make the flag. Tom sat down beside his mother and described the different signals and explained their use.



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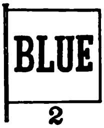

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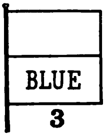

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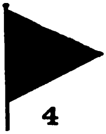

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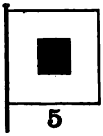


5

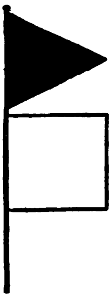
4. "You see, mother, there are *five* signals. Three of them show whether we are to have fair or stormy weather, and the other two show whether it is to be warmer or colder. The plain white flag means fair weather. The plain blue flag means rain or snow. The blue and white means local rain or snow. The black triangular flag means warmer or colder."

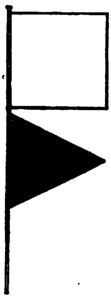
5. "I don't understand," said his mother, "how the same signal can mean *both*

warmer and colder. This must be something like the old story of blowing hot and blowing cold with the same breath.”

6. “No,” said Tom, “it is something like the thermometer. The mercury rises when the air is warmer, and falls when it is cooler. The temperature flag is placed *above* the other flag if the day is to be warmer, but it is placed *below* the other signal if the day is to be cooler.”

7. Tom then made a little sketch showing the signals placed for a fair, warm day, and another one for a fair, cooler day.





“I understand,” said his mother. “That is a very simple way of telling the story.”

8. “When a cold wave is coming,” said Tom, “the cold-wave flag—No. 5—is used instead of the black temperature signal.”

“You have taught me a very interesting lesson,” said Tom's mother. “Now I shall look for the weather signals on your school building and in other places, and I shall understand what they say.”

LESSON 38.

SOME FUNNY HOUSES.

built
moun′-tains
wood′-en
slop′-ing
shel′-ter
an′-i-mals
fa′-mous
o′-ver-flow
neith′-er
heat′-ed
light′-ed
ei′ther

1. The houses that are most frequently seen by us are built either of wood, brick, or stone; and we often see iron buildings in the business parts of the city.

2. Many of the houses built among mountains are made of wood. Here* is a picture of a strange wooden house. Such a house has a long sloping roof, which is built so as to shelter the house from the snow, which often falls in winter.

3. Only a part of this house is used to live in. In the winter, a part is used as a shelter for horses, cows, sheep, goats, and pigs, and another part is used as a storehouse for food for man and beast. In winter time, a man can look after all his animals without going out of doors at all.

4. In some parts of the world, men have

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*See Frontispiece.

to move from place to place in search of food for themselves, or for their sheep and cattle. They do not build houses, but live in tents which they can put up and take down with ease. The Arabs are the most famous people who live in tents.

5. In some parts of South America there are many large rivers. These rivers overflow their banks at least once a year, and wash nearly everything away for miles around.

6. The Indians, who live in those parts, sometimes build their houses in the trees, high above the highest place to which the water ever rises.

7. Sometimes they drive long poles into the ground, and build their houses on the tops of them.

8. In the cold North, the people have neither wood nor stone with which to build houses, so they build their houses of bricks; but the bricks are made of hard snow. They use a slab of ice for a window. The inside of this snow house is not cold, as you might think it would be. It is

heated by a lighted lamp, and is quite warm and cosey.

9. In Africa, many black men build huts made of mud or clay. The door is a hole near the ground. The man has to crawl on his hands and knees in order to get into this hut. The inside is often dark, and always very dirty. Perhaps the worst houses in the world are made by these poor black men of Africa.

LESSON 39.

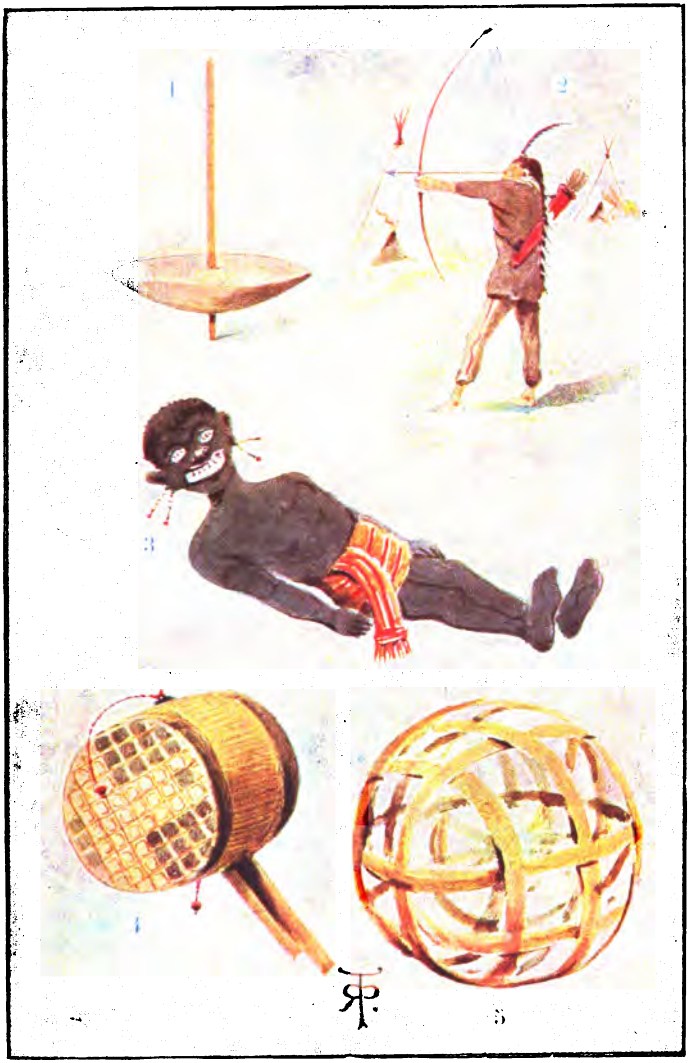
OTHER CHILDREN'S TOYS.

thought
yel′-low
Af′-ri-ca
A-mer′-i-ca
wher-ev′-er
pret′-ty
spin′-ning
na′-ked
bounc′-es
quick′-ly
fin′-est
pic′-ture

1. You all know what dolls, tops, balls, and kites are. Perhaps some of you have not thought that there are black boys and girls, and red boys and girls, and yellow boys and girls, and brown boys and girls.

2. The black boys live in Africa, the red boys in some parts of America, the yellow boys in China, and the brown boys in India.

3. Now wherever you find boys and



HEATHEN TOYS.

1. Black boy's top. 2. Red Indian boy's bow and arrow. 3. Black girl's doll.
4. Chinese boy's drum. 5. Brown boy's football.

girls, you are sure to find toys of one kind or another.

4. Here is a picture of a doll with which a little African girl plays. You may think it is very ugly, but she thinks it is very pretty indeed.

5. The African boy, too, has his toys. Here is an African boy's top. It is made of stone, and has a long stick. This boy does not spin his top with string. He sets his top spinning by turning the stick quickly backwards and forwards between his two hands.

6. The little red Indian boy has his toy bow and arrow, and tries to shoot just as his father does.

7. The yellow boy has his drum, but he has no drumsticks. In the picture you see two large beads hanging from the drum. The yellow boy holds the drum by the stick, and moves it quickly backwards and forwards.

8. The beads strike the drum, and thus the yellow boy can make quite as much noise as the white boy does.

9. Boys and girls all over the world play with balls. In the picture you see a ball with which some brown boys play football. They kick the ball with their naked feet. It is very light, and being made of cane, it bounces well.

10. The finest kites in the world are made in China, the home of the yellow boy. There, in that strange land, the fathers fly the kites and the boys look on.

LESSON 40.

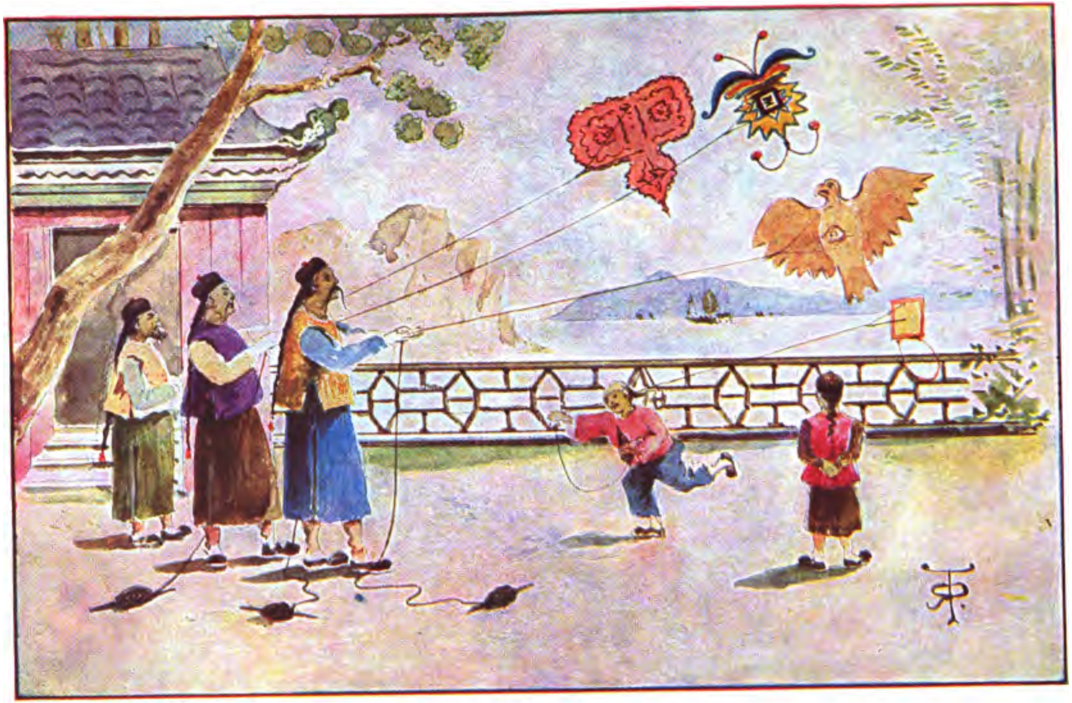
SOME SCHOOLS IN OTHER LANDS.

Part 1.

Eng′-lish
French
Ger′-man
coun′-try
clum′-sy
knives
pic′-ture
crick′-et
leath′-er
hol′-i-day
Zu′-rich
hour

1. So you wish me to tell you to-day about some of the schools for boys and girls in other countries. Very well, we will go abroad for an hour. I hope you are good travelers, for we must travel far and fast.

2. This large map of Europe, Asia, and



FLYING KITES IN CHINA.

Africa will help to show us where these schools are. These pictures will help us to remember some of the things we see.

3. Let us go first to England, which Tom will kindly point out on the map, that we all may see just where it is. He will also find London for us, because we are to land there.

SHAKSPERE'S SCHOOLROOM.

4. Here we are already in London. This fine looking, polite policeman, who is an

Englishman from the country, will direct us to the nearest board school. The schools in England called board schools are somewhat like our public schools.

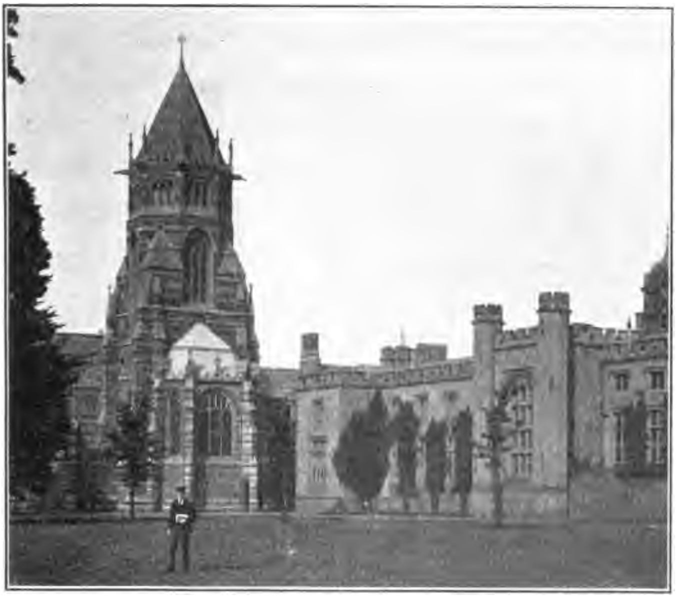
5. On the page we have just read there is a picture of a very old school in Stratford, not far from London. It is the school to which Shakspere went when he was a boy. The schoolboys there to-day use the same benches and desks which were in use more than two hundred years ago.

6. Some of the benches, or forms, are very old and black and heavy and clumsy. Sometimes, too, the desks are very much cut, showing how industriously the boys have used their knives.

7. Some of you, perhaps, have heard of Tom Brown of Rugby. Rugby, one of England's most famous public schools, is not far from Stratford. I am sorry I have no picture to show you of Tom Brown's desk and of his "study," but here is one of the chapel and of the playground.

8. But we must make haste if we are to be in Paris in time to meet the little

French boys on their way to school. In winter, when it rains so much in Paris, the schoolboy wears a short, thick, warm cape, with its pointed hood over the head for a cap. Then he does not mind the rain or cold.



RUGBY CHAPEL AND PLAYGROUND.

9. The French boys always carry their books and papers in a black leather portfolio, which is very convenient. Don't

you think the French boy must be very hungry when he goes home at noon to his hot luncheon, which he calls breakfast?

10. His first breakfast, at eight o'clock, was a cup of coffee or chocolate with bread, no butter. At his second breakfast he has meat, and vegetables, bread, salad, and dessert.

11. I suppose Thursday is the favorite day of the week with French boys, because, like our Saturday, it is the holiday from school. But we must go on to Switzerland, which, you see, is a near neighbor to France.

12. How would you like to be a schoolboy in Zurich, where schools begin at half-past seven in the morning and everyone speaks German? Here is a picture of a German schoolboy.

A GERMAN SCHOOLBOY.

LESSON 41.

SOME SCHOOLS IN OTHER LANDS.

PART 2.

Ar′-ab
church
bench′-es
mas′-ter
plaits
ei′-ther
learn
shaved
Chi′-na
fun′-ny
un-luck′-y
dis-grace′

1. To-day you would like to hear about some schools that are very unlike your school.

2. Then let us go to Arabia. Find it quickly on the map. Here is a picture of an Arab school. It is often held in a

AN ARAB SCHOOL.

part of an Arab church. Only a few Arab boys go to school, and Arab girls never go at all.

3. There are no desks and no benches. The master and the boys sit on the ground with their legs crossed.

4. The master does not teach a class of several boys at once, as your teacher does. He calls up each boy in turn, and hears him say his lessons.

5. The other boys either study their lessons, or talk and play, just as they please. They do not use slates or paper, but sometimes they write on sand with a sharp stick.

6. In China, there are many schools for boys, but very few girls ever go to school. A Chinese boy does not wear his hair like boys in this country; all his head is shaved except a round piece at the back. Here his hair grows long.

7. He plaits this long hair, which is called a pigtail, and he is very proud of it. You would offend a Chinese boy very much if you pulled his pigtail.

8. Each Chinese schoolboy has a desk to himself, and he never talks in school. His master teaches only one at a time. When the Chinese boy says his lessons, he always turns his back on his master. That is very funny, is it not?

A CHINESE SCHOOL.

9. He is beaten very often, but he does not seem to mind so long as he is not beaten with a broom. A beating with a broom is a sad disgrace, and the Chinese boy thinks that it makes him uulucky all the rest of his life.

LESSON 42.

FOREIGN CHILDREN

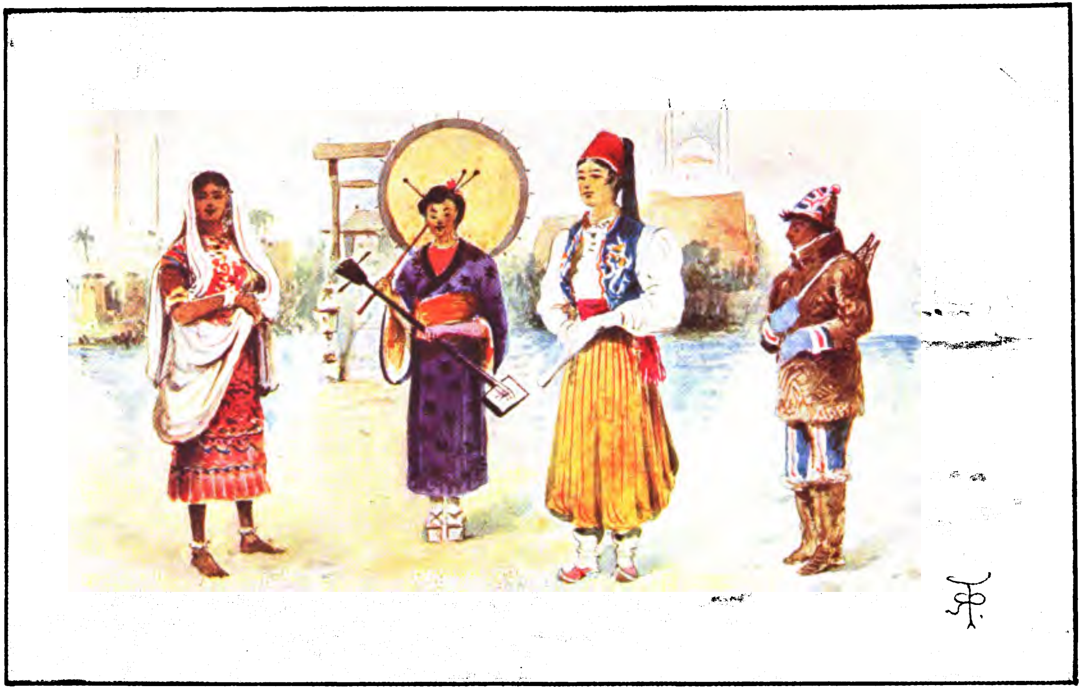
In′-di-an
Sioux (Su)
Es′-ki-mo
Jap-an-ee′
scar′-let
os′-trich
tur′-tles
wear′-ied
cu′-ri-ous
prop′-er
frost′-y
eat′-en

1. Little Indian, Sioux (Su), or Crow,
Little frosty Eskimo,
Little Turk or Japanee,
O! don't you wish that you were me?

2. You have seen the scarlet trees,
And the lions over seas;
You have eaten ostrich eggs,
And turned the turtles off their legs.

3. Such a life is very fine,
But it's not so nice as mine:
You must often, as you trod,
Have wearied not to be abroad.

4. You have curious things to eat,
I am fed on proper meat;
You must dwell beyond the foam,
But I am safe and live at home.



Hindoo. Japanese. Turk. Eskimo.

TYPES OF GIRLS.

5. Little Indian, Sioux, or Crow,
Little frosty Eskimo,
Little Turk or Japanee,
O! don't you wish that you were me?

ROBERT LOUIS STEVENSON.

Sioux (Su), Crow : tribes of North American Indians.
Eskimo : people who live in the frozen North.

LESSON 43.

GIANT STEAM

ket′-tle	**popped**	**called**	**queer**
won′-der	**cloud**	**gi′-ant**	**sail′-ing**
bub′-ble	**voice**	**friends**	**feath′-er**

1. Mary sat looking at the kettle on the fire. She could hear it singing. "If it could only talk," said she to herself, "I wonder what it would say." Just then there was a bubbling in the kettle, and out popped a beautiful white cloud.

2. At the same time, a voice said, "So you wonder what it would say! First, let me say, 'Good-evening, little girl,' then let me tell you that I am one of the giants. I am so strong I drive trains along the rails and ships over the sea.

3. "I might be called the giant traveler, for I am always going somewhere. I never tire of traveling."

"Oh," said Mary, who was wishing to hear a fairy story, "won't you please tell me about some of your travels?"

4. "Certainly," said the giant, "where shall we begin?"

"Anywhere you like," answered Mary; "only please tell me all about yourself—

where you live, where you have been, and where you are going. I should like also to know the names of some of your friends."

5. "To tell you all this would make a very long story, perhaps too long for tonight," said the giant, "but I know we shall meet again some day. We will finish the story then if you like.

6. "First of all, then, I came from the sea, which is my home. As I said, I am a great traveler. I am also a hard worker, and my work calls me very often from home."

7. "Do you travel alone?" asked Mary.

"No," answered the giant, "one of my friends is always with me. I think you know these friends of mine, their names are Heat and Cold."

8. "How queer," thought Mary, "Heat and Cold for friends!"

The giant saw Mary was thinking about something, so he waited for her to ask a question.

Soon she said, "Why do you have such queer people for friends? If you like Heat very much, I don't see how you can like Cold also."

9. The giant smiled. "You see, little girl, I am always traveling. My friend Heat takes me to certain places and to certain work, and my friend Cold takes me to other places and to other work."

10. "Which friend took you from your home in the sea, and where did you go?" asked Mary.

"My very good friend Sun Heat took me from the sea.

11. "He said to me one day, 'Come with me, I have something to show you.' Before I knew it, I was out of the water, and sailing through the air like a feather. Up, up, we went, higher and higher, over the houses and churches and trees. I thought surely we should then reach the stars.

12. "Then a Wind came hurrying to us. He came close to me and said, 'I am very glad you are here, Water Gas. We have been waiting for you. I cannot see you, but I know you are here."

13. "Pray tell me who is Water Gas," interrupted Mary.

"Water Gas is my name when I am traveling through the air with my friend

CLOUDS.

Heat," replied the giant. "Perhaps you know that kings and queens sometimes change their names and their dress when they travel in foreign lands. I do the same thing. When I am Water Gas, no one can see me."

14. "How very strange you are!" said Mary, "quite like a fairy. But please go on with your story."

15. "Soon after Wind joined us, we came to some high hills and mountains. I began to feel ill. I shivered and felt myself grow smaller. I looked about for my friend Heat. He had left me long before.

16. "'You look white,' said Wind.

"'Yes,' said a stranger who came from the mountain top, 'Water Gas always shivers and looks white when I am near. My name is Cold,' he said to me; 'I am glad to see you. I know all of your friends. They always come to me when they are ready to go home. I am taking people to the sea every day.

17. "'This cloud is one of my parties. We shall have a pleasant journey home. The sky is blue and the moon is full. We shall travel very fast, for Wind is with us.'

18. "After a day or two, Cold said to us, 'Let us all join hands and go down into the beautiful valley below us.'

19. "Down we went with a rush. Over the hills and trees and churches and houses and people. We heard the children say, 'Oh, see how it rains!'

20. "I heard the grass say, 'I am *so* glad to see you, I am very thirsty.' Some of my friends went with me down into the dark, dry earth.

21. "We found it very dark and close and cold. We went down and down till I feared we should never again see the sunlight and feel the air.

22. "Soon we were dashing over rocks and stones in a river. There was a poor blind fish in our river, deep down in the dark earth.

23. "We hurried along. I had no idea where we should go next. Suddenly we came out into the sunlight. We were on a hillside, and I heard a boy say, 'There is a fine spring.'

24. "But we did not stay there. We traveled on and on, and very fast, for we were always going down hill. Down, down we went, till we came to our jour-

ney's end, the sea. Is it not true," said the giant, "that I am a great traveler?"

A SPRING ISSUING FROM A HILLSIDE.

25. "It is indeed," replied Mary. "Are you going home now?"

"No," said the giant, moving away, "I have yet far to go with my friend Heat. Good-by, little girl. We shall surely meet again.

26. "When you see the ocean or the clouds, or the vapor from the kettle, or the mist and rain, or the brooks and rivers, remember your friend the giant and the story he told you of his travels. Good-by."

LESSON 44.

THE WORK OF WATER.

va′-por
quar′-ter
to-geth′-er
wear′-ing
chan′-nel
slow′-ly
eat′-ing
froz′-en
lay′-ers
gla′-cier
val′-leys
scooped

1. About three quarters of the face of the earth is covered with water. Only about one quarter is dry land.

2. Salt water is found in oceans, seas, and a few lakes. Fresh water is found in rivers, ponds, and most lakes.

3. The heat of the sun causes water to change into a vapor or gas. This water vapor or water gas goes into the air, where we cannot see it.

4. As water gas is very light, it rises in the air. The higher parts of the air are cold, and the cold causes the water vapor to turn back into little drops of water, which make up the clouds.

5. These little drops of water run together and fall as rain. Part of the rain which falls is turned again into water vapor by the sun; part soaks into the ground, and helps to form springs; part runs over the ground, and helps to form rivers.

6. Rivers rise in mountains or hills, and flow into seas or lakes. The water in a river is always moving, and is wearing out the land over which it flows. The bed or channel of a river has been worn out by the river itself.

7. The water of the sea washes against the rocks of the coast, and slowly wears them out. The sea is, as it were, slowly eating away the land.

8. When water becomes very cold, it freezes and becomes ice. Ice is a solid. Hail is frozen rain, but snow is not.

9. When the very, very small drops of water which form a cloud become very cold, they form snowflakes. Snow is made up of very small drops of water, which have been frozen before they have had time to run together and form raindrops.

WAVES WASHING AWAY THE COAST.

10. On the tops and sides of high mountains, snow is found all the year round. The top layers of snow press the bottom layers and make them into ice. This ice moves slowly down into the valleys, as

a great river of ice or glacier. Glaciers wear away the land over which they move. Many lakes have been scooped out by glaciers.

11. Thus water has three forms. It may be solid, when it is called ice or snow or hail. It may be liquid, and this is the form in which we know it best. It may be a gas, and then it is in the air and we cannot see it.

12. But whether water is a liquid or a solid or a gas, it is always doing or trying to do one thing—it is always changing the shape of the land and wearing it away.

LESSON 45.

KING FROST.

morn′-ing
clothed
win′-dows
looked
seemed
frost′-y
fro′-zen
freez′-es
clev′-er
bus′-y
add′-ed
think′-ing
i-de′-a
al-though′
pic′-tures
o′-pen-ing

1. One morning Tom came down stairs to find that a sharp frost had set in. The fields and trees were clothed in white, and looked very pretty.

A GLACIER.

2. On the windows were to be seen pictures of what looked like leaves and trees. They were all in white, and seemed to form part of the frosty scene outside.

3. "Who drew those leaves and trees on the window, father?" asked Tom.

"King Frost," said his father. "He draws very odd things at times."

4. "He seems to be very clever, and very busy too," added Tom, thinking of the frost outside.

5. "He is both busy and clever," said his father. "You can have no idea of the work he does. You know, of course, that he makes all the snow."

"Yes, but how does he do it?" asked Tom.

6. "There are little drops of water in the air, although we cannot see them," said his father. "These drops are so small that they are sometimes called water dust. When King Frost comes, he turns this water dust into white flakes of snow."

7. "Then snow and rain must both be made out of the water dust," said Tom.

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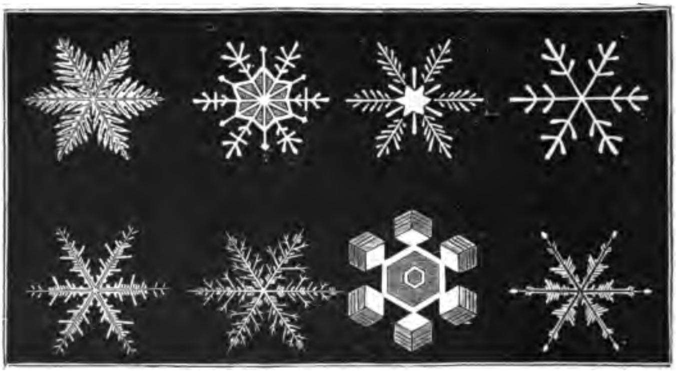
8. "Yes," said his father; "but King Frost makes the snow only, and every flake has a very pretty shape. Here is a picture of some," said his father, opening a book.

9. "What pretty shapes!" said Tom.



SNOWFLAKES.

"Every flake has six points, and looks like a star."

10. "He also sends us hail and ice," said his father. "In the form of a cold blast, he waits for the raindrops, and turns them into hail."

11. "Then hail is only frozen raindrops?" asked Tom.

His father did not reply, but went on

to speak of the ice. "You know that our water pipes burst the other day, Tom," he said. "A sharp thaw had set in, and the pipes burst."

12. "But why should a thaw burst the water pipes?" asked Tom.

13. "Ice always takes up more room than water," said his father. "So when the water in the pipe freezes, it swells with great force and cracks the pipe. Then when the thaw comes, the ice is again turned into water, and the water pours through the crack the ice has made.

14. "These are a few only of the great things done by King Frost. But you must be off to school now," said his father.

SUMMARY.

LESSON 1 (*p.* 5).

The earth is a sphere, being something like an orange in its shape. It is a little flat at the top and bottom. It also bulges out more in the center than a ball.

LESSON 2 (*p.* 9).

1. The **crust** of the earth is made up of land and water.
2. The earth was once a ball of fire. It is cooling, and although the inside is still very hot, the outside, or crust, is cool enough to live upon.
3. Many of the wrinkles (hills and valleys) on the earth's crust have been partly caused by heat.

LESSON 3 (*p.* 14).

1. The sun is a big ball of fire.
2. The sun is the source of all **light, heat,** and **life.** We could not live without the sun.

LESSON 4 (*p.* 17).

1. Those countries are the best to live in which are neither too hot nor too cold.
2. As a rule, it is cooler in the morning and evening than at midday.
3. The sun rises each day in the east and sets in the west.
4. In the summer it makes a big curve in the sky, and the days are longer and warmer.
5. In the winter it makes a smaller curve in the sky, and the days are shorter and colder.

6. The sun does not move round the earth. It is the earth which moves round the sun.

LESSON 6 (*p.* 21).

1. The moon is smaller than the earth, and very much smaller than the sun.
2. It does not shine with its own light, but with light it gets from the sun.
3. It gives less light than the sun. We see it in the sky at night.
4. It is nearer to the earth than any other body in the sky.
5. The moon is a cold body. It has no air, and we could not live upon it.

LESSON 8 (*p.* 25).

1. The sky is always full of stars.
2. We cannot see the stars by day, because the brighter light of the sun blots them out.
3. Some of the stars are suns, like our sun; some are worlds, like our world; and some are like our moon.
4. All the stars are very far away from the earth. Many of them are farther away than the sun.

LESSON 10 (*p.* 29).

To make a shadow we must have :—

(*a*) A light.
(*b*) Something through which the light will not pass.
(*c*) Something upon which the shadow may fall.

LESSONS 12 and 13 (*pp.* 35, 38).

1. In the morning, the sun is low in the sky. The shadows which it makes are long.
2. At midday, the sun is at its highest point in the sky. The shadows are then short.
3. In the evening, the sun is low in the sky. The shadows which it makes are long.
4. The shadow of a broomstick stuck in the ground moves because the earth moves.
5. We can tell the time by the direction of the sun's shadow.

Lesson 14 (*p.* 41).

Many years ago, there were no clocks, and men told the time sometimes by means of the **sundial**, sometimes by means of the **hourglass**, and sometimes by means of **water clocks** and **candles**.

Lesson 15 (*p.* 48).

1. A weather vane has four arms, with a letter at the end of each arm.
2. The four letters are N, S, E, and W, standing for north, south, east, and west.
3. Above the four arms, there is an arrow which points in the direction the wind is blowing.

Lesson 16 (*p.* 51).

When I turn my back to the sun at midday, I am facing the north, and turning my back to the south. My right hand is pointing towards the east, and my left hand is pointing towards the west.

Lesson 18 (*p.* 56).

1. The farther north we go, the colder it becomes.
2. In the far North, ice and snow are found on the ground for the greater part of the year.
3. The north wind is a very cold wind.
4. The sun rises in the east.
5. Sunrise is often a grand sight.

Lesson 19 (*p.* 58).

1. The sun sets in the west.
2. The west wind is a gentle wind which often brings rain.
3. Nearly all the people in very hot countries are black or brown.
4. Trees and plants grow well in many hot countries.

Lesson 20 (*p.* 61).

1. A magnet picks up things which are made of iron or steel.
2. It will not pick up things made of anything else.

LESSON 21 (*p.* 64).

1. To make a piece of steel into a magnet, rub the piece of steel with a magnet. Take care always to rub the same way, either always backwards or always forwards.

2. A magnet which floats on a cork on water always points in one direction—north and south.

3. One end always points to the north, the other end always points to the south.

LESSON 22 (*p.* 67).

1. A magnet which is balanced on a thread will also point north and south.

2. Men can tell the north by looking at :—
   (*a*) The sun.
   (*b*) The stars.
   (*c*) A magnet.

3. A magnet is useful for telling the north when the sun or stars cannot be seen.

LESSONS 23 and 24 *pp.* (70, 73).

A school compass has the following parts :—

1. A needle, which is a magnet and which is balanced on a peg or pivot.

2. A card below the needle, with the points of the compass marked upon it.

3. A box to contain the needle, pivot, and card.

4. A glass cover, so that the needle may be seen.

LESSON 25 (*p.* 76).

1. A ship's compass is much like a school compass, but the needle is under the card. As the needle moves, the card moves round with it.

2. The ship's compass is fixed in such a way that, however much the ship may roll, the compass will always keep steady.

LESSON 26 (*p.* 79).

1. A **plan** is a drawing of some object or place.

2. As a rule, **plans are drawn to scale.**

LESSON **27** (*p.* 82).

1. The scale, to which plans are drawn, may be of any size.

2. A scale of one inch to a foot means, that for every foot on the object or place, one inch only is drawn on the plan. In this way, a line twelve feet long on the object would be twelve inches long on the plan.

LESSON **28** (*p.* 85).

1. A plan shows the shape and size of objects or places.

2. It also shows the position and direction of the objects.

LESSONS **30** and **31** (*pp.* 92, 95).

1. Before we can draw the plan of an object or place, the length of all its lines has to be known.

2. This is learned by measuring the object.

3. Every part of the plan has to be its proper size and in its proper place. This also is learned by measuring.

4. In the plans of rooms, buildings, and spaces, the points of the compass should be put in.

LESSON **32** (*p.* 98).

As a rule, the larger the space to be drawn, the smaller the scale.

LESSON **33** (*p.* 104).

1. In the plan of a town or part of a town, whole blocks of houses are shown by simply shading the ground on which they stand. Such a plan is called a **block plan** or a diagram.

2. A **ground plan** is one which shows the shape and size of the ground on which the object stands. It does not show height or depth.

3. A **map** is the plan of a large space. When we want to show the plan of a very large tract of land, a part of a country, a whole country, or a great many countries, we do so by means of a map, or maps.

4. The scale to which a map is drawn is always very small.

LESSON 36 (*p.* 115).

1. On a map, a **river** becomes a mere wavy line.
2. A **town** is shown by a tiny circle.
3. **Large towns** are named in small capitals, smaller towns in thick type, and the smallest towns in thin type.
4. The **coast** is marked by a thick, wavy line. The coast shows where the land ends and the sea begins.
5. Every map should show a "scale of miles;" that is, the scale to which it is drawn.

LESSON 37 (*p.* 123).

The five weather signals are as follows :

1. The **white** flag indicates fair weather.
2. The **blue** flag indicates rain or snow.
3. The **white** and **blue**, local rain or snow.
4. The **black** triangular flag, by its position, a rise or fall in temperature.
5. The **white** with **black** center, a cold wave.

LESSON 38 (*p.* 126).

1. In some mountainous countries, the shelters for man and beast are under the same roof.
2. The Arabs are a famous people who live in tents.
3. In some parts of South America, the Indians build their houses in trees.
4. In the far North, men build their houses of snow and ice.
5. Some black men build huts of mud or clay.

LESSON 43 (*p.* 139).

1. Water when heated becomes steam. Trains and ships are driven by steam.
2. Steam, when it strikes against anything cold, changes into water.
3. The air has a great deal of water in it. The water in the air is sometimes called water gas. We cannot see the water gas, but we know it is there.
4. Clouds are made up of little drops of water, which have come from the water gas in the air.

5. The little drops of water sometimes run together and fall as raindrops.

6. Some of the rain sinks into the ground and forms **springs.**

7. Springs form rivers, which flow into the sea.

LESSON **44** (*p.* 147).

1. About one quarter of the surface of the world is dry land and about three quarters of it is water.

2. **Salt water** is found in oceans and seas. **Fresh water** is found in rivers and lakes.

3. The sea washes against the coast and slowly wears it away.

4. Rivers wear out the land over which they flow, and carry it, little by little, into the sea.

5. **Glaciers** are rivers of ice which wear out the land over which they move.

6. Water has three forms. It may be **solid ice,** or **liquid water,** or **water gas.** But in whatever form water may be, it is always trying to wear away the land.

LESSON **45** (*p.* 150).

1. **Snow** is water gas, which is frozen before it has time to run together and form little drops of water.

2. **Rain** is also made out of water gas, or water dust as it is sometimes called.

3. Every snowflake has six points, although the snowflakes differ much in shape.

4. **Hail** is frozen raindrops.

5. **Ice** is frozen water.

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